

Safety Data Sheet

sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: 113
Issue date: 01/01/2000 Revision date: 29/01/2026 Supersedes version of: 19/12/2022 Version: 9.0

Danger



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

1.1. Product identifier

Trade name : sulphur dioxide
SDS no : 113
Other means of identification : sulphur dioxide
CAS-No. : 7446-09-5
EC-No. : 231-195-2
EC Index-No. : 016-011-00-9
REACH registration No : 01-2119485028-34
Chemical formula : SO₂

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

Relevant identified uses : See the list of identified uses and exposure scenarios in the annex of the safety data sheet.
Perform risk assessment prior to use.
Uses advised against : Consumer use.
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

SOL SpA
Via G. Borgazzi 27
20900 MONZA
Italia
T +39 039 23.96.1, F +39 039 23.96.420
msds@sol.it, <http://www.sol.it>

1.4. Emergency telephone number

Emergency telephone number : Linea verde SET - 800452661 (24h/24h, 365 giorni l'anno); Dall'estero +39 0283421263

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Gases under pressure : Liquefied gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 3	H331
	Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
	Serious eye damage/eye irritation, Category 1	H318
	Specific target organ toxicity – single exposure, Category 1	H370

1

Safety Data Sheet

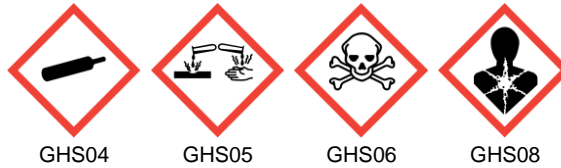
sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: 113

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H314 - Causes severe skin burns and eye damage.
H280 - Contains gas under pressure; may explode if heated.
H331 - Toxic if inhaled.
H370 - Causes damage to organs.
EUH071 - Corrosive to the respiratory tract.

Precautionary statements (CLP)

- Prevention

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

- Response

: 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.
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.

- Storage

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

2.3. Other hazards

Not classified as PBT or vPvB.
The substance/mixture has no endocrine disrupting properties.
Not classified as PMT or vPvM.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
sulphur dioxide	CAS-No.: 7446-09-5 EC-No.: 231-195-2 EC Index-No.: 016-011-00-9 REACH registration No: 01-2119485028-34-0032	100	Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 1, H370 EUH071

Name	Product identifier	Specific concentration limits (%)
sulphur dioxide	CAS-No.: 7446-09-5 EC-No.: 231-195-2 EC Index-No.: 016-011-00-9 REACH registration No: 01-2119485028-34-0032	(1 ≤ C < 10) STOT SE 2; H371 (10 ≤ C ≤ 100) STOT SE 1; H370

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation 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.

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

Prolonged exposure to small concentrations may result in pulmonary oedema.
May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product.
Material is destructive to tissue of the mucuous membranes and upper respiratory tract.
Cough, shortness of breath, headache, nausea.
See section 11.

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

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

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
Product does not burn, use fire control measures appropriate for the surrounding fire.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

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 that are more hazardous than the product itself.

5.3. Advice for firefighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.
- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel
- : Act in accordance with local emergency plan.
 - Try to stop release.
 - Evacuate area.
 - Ensure adequate air ventilation.
 - Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
 - Stay upwind.
 - See section 8 of the SDS for more information on personal protective equipment.
- For emergency responders
- : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
 - Use chemically protective clothing.
 - Monitor concentration of released product.
 - See section 5.3 of the SDS for more information.

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

- 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
- : Do not breathe gas.
 - Avoid release of product into work area.
 - Use only lubricants and sealings approved for the specific gas service.
 - The product must be handled in accordance with good industrial hygiene and safety procedures.
 - Only experienced and properly instructed persons should handle gases under pressure.
 - Consider pressure relief device(s) in gas installations.
 - Ensure the complete gas system was (or is regularly) checked for leaks before use.
 - Do not smoke while handling product.
 - Avoid exposure, obtain special instructions before use.
 - Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
 - Installation of a cross purge assembly between the container 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.
 - Avoid suck back of water, acid and alkalis.

Safety Data Sheet

sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
 SDS Reference Number: 113

Safe handling of the gas receptacle

- : Do not allow backfeed into the container.
- Protect containers 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, when provided, 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 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 contaminants 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 content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

sulphur dioxide (7446-09-5)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Sulphur dioxide
IOEL TWA	1.3 mg/m ³
	0.5 ppm
IOEL STEL	2.7 mg/m ³
	1 ppm
Regulatory reference	COMMISSION DIRECTIVE (EU) 2017/164
Italy - Occupational Exposure Limits	
Local name	Anidride solforosa
OEL TWA	1.3 mg/m ³
	0.5 ppm
OEL STEL	2.7 mg/m ³

Safety Data Sheet

sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: 113

	1 ppm
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i. (D.Lgs. 4 settembre 2024, n. 135)
USA - ACGIH® - Threshold Limit Values	
Local name	Sulfur dioxide
ACGIH® TLV® STEL	0.65 mg/m ³
	0.25 ppm
Remark (ACGIH®)	TLV® Basis: Pulm func; LRT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2025
sulphur dioxide (7446-09-5)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	2.7 mg/m ³
Long-term - local effects, inhalation	2.7 mg/m ³

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Product to be handled in a closed system.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when toxic gases may be released.
Consider the use of a work permit system e.g. for maintenance activities.

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:

PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection

: Wear goggles and a face shield when transfilling or breaking transfer connections.
Provide readily accessible eye wash stations and safety showers.
Standard EN 166 - Personal eye-protection - specifications, or
Standard EN ISO 16321-1 Eye and face protection for occupational use Part 1 : General requirements.

• Skin protection

- Hand protection

: Wear working gloves when handling gas containers.
Wear chemically resistant protective gloves.
Standard EN 374 - Protective gloves against chemicals.
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.
Chloroprene rubber (CR).

- Other

: Keep suitable chemically resistant protective clothing readily available for emergency use.
Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

- Respiratory protection
 - : Recommended: Filter E (yellow).
 - Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
 - Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
 - Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
 - Gas filters do not protect against oxygen deficiency.
 - Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
 - Keep self contained breathing apparatus readily available for emergency use.
 - Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
- Thermal hazards
 - : None in addition to the above sections.

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°C / 101.3kPa	: Gas.
- Colour	: Colourless.
Odour	: Pungent.
Melting point / Freezing point	: -75.5 °C
Boiling point	: -10 °C
Flammability	: Non flammable.
Lower explosion limit	: Not applicable.
Upper explosion limit	: Not applicable.
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: Not applicable.
pH	: If dissolved in water pH-value will be affected.
Viscosity, kinematic	: No reliable data available.
Water solubility [20°C]	: 114 g/l
Partition coefficient n-octanol/water (Log Kow)	: Not applicable for inorganic products.
Vapour pressure [20°C]	: 3.3 bar(a)
Vapour pressure [50°C]	: 8.4 bar(a)
Density and/or relative density	: Not applicable for gases and gas mixtures.
Relative vapour density (air=1)	: 2.3
Particle characteristics	: Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Oxidising properties	: No oxidising properties.
Critical temperature [°C]	: 158 °C

9.2.2. Other safety characteristics

Molar mass	: 64 g/mol
Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

Avoid moisture in installation systems.

10.5. Incompatible materials

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.
 Reacts with water to form corrosive acids.
 Moisture.
 For additional information on compatibility refer to ISO 11114.

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 hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Toxic if inhaled.

sulphur dioxide (7446-09-5)

LC50 Inhalation - Rat [ppm]	2520 ppm/1h (ADR) 1000 ppm/4h (CLP)
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Skin corrosion/irritation : Causes severe skin burns and eye damage.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitisation : No known effects from this product.
Germ cell mutagenicity : No known effects from this product.
Carcinogenicity : 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 : Causes damage to organs.
 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.

11.2. Information on other hazards

Other information : Delayed fatal pulmonary oedema possible.
 The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : Classification criteria are not met.
 EC50 48h - Daphnia magna [mg/l] : No data available.

EC50 72h - Algae [mg/l] : 48.1 mg/l
LC50 96 h - Fish [mg/l] : No data available.

12.2. Persistence and degradability

Assessment : Not applicable for inorganic products.

12.3. Bioaccumulative potential

Assessment : Product is an inorganic gas with a low potential to bioaccumulate in aquatic species.

12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution.
Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems.
Not classified as PMT or vPvM.
Effect on the ozone layer : No effect on the ozone layer.
Effect on global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods.
Must not be discharged to atmosphere.
Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction.
Return unused product in original container to supplier.
List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN
UN-No. : 1079

14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : SULPHUR DIOXIDE
 Transport by air (ICAO-TI / IATA-DGR) : Sulphur dioxide
 Transport by sea (IMDG) : SULPHUR DIOXIDE

14.3. Transport hazard class(es)

Labelling



2.3 : Toxic gases.
8 : Corrosive substances.

Transport by road/rail/inland waterways (ADR/RID/ADN)

Class : 2
 Classification code : 2TC
 Hazard identification number : 268
 Tunnel Restriction : C/D - Tank carriage: Passage forbidden through tunnels of category C, D and E. Other carriage: Passage forbidden through tunnels of category D and E

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.3 (8)
 Emergency Schedule (EmS) - Fire : F-C
 Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail/inland waterways (ADR/RID/ADN) : Not applicable.
 Transport by air (ICAO-TI / IATA-DGR) : Not applicable.
 Transport by sea (IMDG) : Not applicable.

14.5. Environmental hazards

Transport by road/rail/inland waterways (ADR/RID/ADN) : None.
 Transport by air (ICAO-TI / IATA-DGR) : None.
 Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail/inland waterways (ADR/RID/ADN) : P200.
 Transport by air (ICAO-TI / IATA-DGR)
 Passenger and Cargo Aircraft : Forbidden.
 Cargo Aircraft only : Forbidden.
 Transport by sea (IMDG) : P200.

Special transport precautions

: 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 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.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : None.
 Other information, restriction and prohibition regulations : Not listed on the PIC list (Regulation EU 649/2012).
 Not listed on the POP list (Regulation EU 2019/1021).
 Seveso Directive : 2012/18/EU (Seveso III) : Covered.

Seveso III Part I (Categories of dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
H2 ACUTE TOXIC — Category 2, all exposure routes — Category 3, inhalation exposure route	50	200
H3 STOT SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE STOT SE Category 1	50	200

National regulations

Regulatory reference : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes : Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms

: ATE - Acute Toxicity Estimate.
 CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 EINECS - European Inventory of Existing Commercial Chemical Substances.
 CAS# - Chemical Abstract Service number.
 PPE - Personal Protection Equipment.
 LC50 - Lethal Concentration to 50 % of a test population.
 RMM - Risk Management Measures.
 PBT - Persistent, Bioaccumulative and Toxic.
 vPvB - Very Persistent and Very Bioaccumulative.
 STOT- SE : Specific Target Organ Toxicity - Single Exposure.
 CSA - Chemical Safety Assessment.
 EN - European Standard.
 UN - United Nations.
 ADR - Agreement concerning the International Carriage of Dangerous Goods by Road.
 IATA - International Air Transport Association.
 IMDG code - International Maritime Dangerous Goods.
 RID - Regulations concerning the International Carriage of Dangerous Goods by Rail.
 WGK - Water Hazard Class.
 STOT - RE : Specific Target Organ Toxicity - Repeated Exposure.
 UFI : Unique Formula Identifier.
 ADN -International Carriage of Dangerous Goods by Inland Waterways.
 PROC -Process category.
 ERC – Environmental release category.
 PMT - Persistent, Mobile and Toxic.
 vPvM – very Persistent and very Mobile.
 Training advice : Users of breathing apparatus must be trained.
 Ensure operators understand the toxicity hazard.

Safety Data Sheet

sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: 113

Further information

: Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Key literature references and sources of data are maintained in EIGA Doc 169 :
'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .

Full text of H- and EUH-statements	
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
STOT SE 1	Specific target organ toxicity – single exposure, Category 1
STOT SE 2	Specific target organ toxicity – Single exposure, Category 2
H280	Contains gas under pressure; may explode if heated.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H370	Causes damage to organs.
H371	May cause damage to organs.
EUH071	Corrosive to the respiratory tract.

DISCLAIMER OF LIABILITY

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press.
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.

Annex to the safety data sheet

This Annex documents the Exposure Scenarios (ESs) related to the identified uses of the registered substance. The ESs detail protective measures for workers and the environment in addition to those described in sections 7, 8, 11, 12 and 13 of the SDS that are required to ensure that the potential exposure to workers and the environment remains within acceptable levels for each of the identified uses.

Table of contents of the Annex

Identified Uses	Es N°	Short title	ERC	PROC	Page
Metal treatment	EIGA113-2	Industrial uses, closed and open conditions	ERC6b	PROC1 PROC2 PROC3 PROC4 PROC22 PROC23	15
Feedstock in chemical processes	EIGA113-2	Industrial uses, closed and open conditions	ERC1 ERC4 ERC6a ERC6b	PROC1 PROC2 PROC3 PROC4	15
Glass coating	EIGA113-2	Industrial uses, closed and open conditions	ERC4 ERC6a ERC6b	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC22 PROC23	15
Water treatment	EIGA113-2	Industrial uses, closed and open conditions	ERC6b	PROC1 PROC2 PROC3 PROC4	15
Lubrication of rollers in glass manufacture	EIGA113-2	Industrial uses, closed and open conditions	ERC4 ERC6a ERC6b	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC22 PROC23	15
Resin curing	EIGA113-2	Industrial uses, closed and open conditions			15
Formulation of mixtures in pressure receptacles	EIGA113-1	Industrial uses, closed contained conditions	ERC2	PROC1	19
Calibration of analysis equipment	EIGA113-1	Industrial uses, closed contained conditions	ERC7	PROC1 PROC2	19
Transfilling in pressure receptacles	EIGA113-1	Industrial uses, closed contained conditions	ERC2	PROC8b PROC9	19
Refilling of refrigeration equipment	EIGA113-3	Professional uses	ERC6a ERC7	PROC8a PROC8b PROC9 PROC19	23

Safety Data Sheet

sulphur dioxide

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: 113

Wine making	EIGA113-3	Professional uses		PROC8a PROC8b PROC9 PROC19	23
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

1. EIGA113-2: Industrial uses, closed and open conditions

1.1. Title section

Industrial uses, closed and open conditions	
ES Ref.: EIGA113-2 Revision date: 01/10/2016	
Processes, tasks, activities covered	Industrial uses, including product transfers and associated laboratory activities within closed or partially closed conditions
Environment	Use descriptors
CS1	ERC2, ERC4, ERC6a, ERC6b, ERC6d
Worker	Use descriptors
CS2	PROC1
CS3	PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC22, PROC23
Assessment method	MEASE

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: ERC2, ERC4, ERC6a, ERC6b, ERC6d

ERC2	Formulation into mixture
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used, frequency and duration of use (or from service life)	
Regional use tonnage:	≤ 80000 t/yr
Emission Days (days/year)	365

Technical and organisational conditions and measures	
No emissions to water. In case of emissions to water, pH impact on the receiving water should be avoided, e.g. by neutralizing the effluent	

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Ensure operatives are trained to minimise releases	
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Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater	
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Conditions and measures related to treatment of waste (including article waste)

See section 13 of the SDS	
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Other conditions affecting environmental exposure

Closed systems are used in order to prevent unintended emissions	
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1.2.2. Control of worker exposure: PROC1

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 8 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures

Handle product within a closed system	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation

See section 8 of the SDS.	
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1.2.3. Control of worker exposure: PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC22, PROC23

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC22	Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23	Open processing and transfer operations at substantially elevated temperature

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure	
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 8 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures	
Local exhaust ventilation - efficiency of at least [%]:	90
Drain down and flush system prior to equipment break-in or maintenance.	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374	Mandatory since the product is corrosive
Wear suitable working clothes	Personal protection measures have to be applied in case of potential exposure only.
Use suitable eye protection. Wear suitable face shield	Personal protection measures have to be applied in case of potential exposure only.
Face mask with an ABEK1 filter offering an assigned protection factor of 30	Personal protection measures have to be applied in case of potential exposure only.

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Other conditions affecting workers exposure

Indoor or outdoor use

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: ERC2, ERC4, ERC6a, ERC6b, ERC6d

1.3.2. Worker exposure: PROC1

1.3.3. Worker exposure: PROC2, PROC3, PROC4, PROC5, PROC8b, PROC9, PROC22, PROC23

Route of exposure and type of effects	Exposure estimate	Assessment conditions	RCR
Dermal - Long-term - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Dermal - Acute - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Acute - Local - Inhalation	1.08 mg/m ³	Indoor or outdoor use, With LEV90%	0.4

1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

1.4.1. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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1.4.2. Health

Guidance - Health	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

2. EIGA113-1: Industrial uses, closed contained conditions

2.1. Title section

Industrial uses, closed contained conditions

 ES Ref.: EIGA113-1
 Revision date: 01/10/2016

Processes, tasks, activities covered	Industrial uses, including product transfers and associated laboratory activities within different closed or contained systems
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Environment	Use descriptors
CS1	ERC2

Worker	Use descriptors
CS2	PROC1
CS3	PROC8b, PROC9

Assessment method	MEASE
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2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: ERC2

ERC2	Formulation into mixture
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Product (article) characteristics

Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used, frequency and duration of use (or from service life)

Regional use tonnage:	≤ 80000 t/yr
Emission Days (days/year)	365

Technical and organisational conditions and measures

Use appropriate abatement systems to ensure that the emission levels defined by local regulations are not exceeded.	
No emissions to water. In case of emissions to water, pH impact on the receiving water should be avoided, e.g. by neutralizing the effluent	
Ensure operatives are trained to minimise releases	

Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater	
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Conditions and measures related to treatment of waste (including article waste)

See section 13 of the SDS

Other conditions affecting environmental exposure

Closed systems are used in order to prevent unintended emissions

2.2.2. Control of worker exposure: PROC1

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product

See section 9 of the SDS, No additional information

Concentration of substance in product

 $\leq 100 \%$

Amount used (or contained in articles), frequency and duration of use/exposure

The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.

Exposure duration

 ≤ 8 h/day

Covers frequency up to:

5 days/week

Technical and organisational conditions and measures

Handle product within a closed system

Ensure operatives are trained to minimise exposure

Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed

Conditions and measures related to personal protection, hygiene and health evaluation

See section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use

2.2.3. Control of worker exposure: PROC8b, PROC9

PROC8b

Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9

Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure	
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 8 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures	
Handle product within a closed system	
During indoor processes or in cases where natural ventilation is not sufficient, LEV should be in place at points where emissions could occur. Outdoor, LEV is not generally required.	
Fill containers at dedicated fill points supplied with local extract ventilation.	
Drain down and flush system prior to equipment break-in or maintenance.	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation	
See section 8 of the SDS.	

Other conditions affecting workers exposure	
Indoor or outdoor use	

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: ERC2

2.3.2. Worker exposure: PROC1

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Route of exposure and type of effects	Exposure estimate	Assessment conditions	RCR
Dermal - Long-term - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Dermal - Acute - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Acute - Local - Inhalation	0.648 mg/m ³	Indoor or outdoor use	0.24

2.3.3. Worker exposure: PROC8b, PROC9

Route of exposure and type of effects	Exposure estimate	Assessment conditions	RCR
Dermal - Long-term - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Dermal - Acute - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Acute - Local - Inhalation	1.08 mg/m ³	Indoor or outdoor use	0.4

2.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

2.4.1. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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2.4.2. Health

Guidance - Health	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

3. EIGA113-3: Professional uses

3.1. Title section

Professional uses

 ES Ref.: EIGA113-3
 Revision date: 01/10/2016

Processes, tasks, activities covered	Professional uses, including transfer of product in non-industrial settings
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Environment	Use descriptors
CS1	ERC6a, ERC7

Worker	Use descriptors
CS2	PROC8b, PROC9
CS3	PROC19

Assessment method	MEASE
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3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: ERC6a, ERC7

ERC6a	Use of intermediate
ERC7	Use of functional fluid at industrial site

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used, frequency and duration of use (or from service life)	
Regional use tonnage:	≤ 80000 t/yr
Emission Days (days/year)	365

Technical and organisational conditions and measures	
Use appropriate abatement systems to ensure that the emission levels defined by local regulations are not exceeded.	
No emissions to water. In case of emissions to water, pH impact on the receiving water should be avoided, e.g. by neutralizing the effluent	
Ensure operatives are trained to minimise releases	

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater

Conditions and measures related to treatment of waste (including article waste)

See section 13 of the SDS

Other conditions affecting environmental exposure

Closed systems are used in order to prevent unintended emissions

3.2.2. Control of worker exposure: PROC8b, PROC9

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product (article) characteristics

Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.

Exposure duration	≤ 8 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures

Handle product within a closed system	
Drain down and flush system prior to equipment break-in or maintenance.	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374	Mandatory since the product is corrosive
Wear suitable working clothes. Chemical resistant safety shoes	Personal protection measures have to be applied in case of potential exposure only.

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Use suitable eye protection. Wear suitable face shield	Personal protection measures have to be applied in case of potential exposure only.
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Other conditions affecting workers exposure

Indoor or outdoor use

3.2.3. Control of worker exposure: PROC19

PROC19	Manual activities involving hand contact
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Product (article) characteristics

Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.

Exposure duration	≤ 15 min/day
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Technical and organisational conditions and measures

Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374	Mandatory since the product is corrosive
Wear suitable working clothes. Chemical resistant safety shoes	Personal protection measures have to be applied in case of potential exposure only.
Use suitable eye protection. Wear suitable face shield	Personal protection measures have to be applied in case of potential exposure only.
Face mask with an ABEK1 filter offering an assigned protection factor of 30	

Other conditions affecting workers exposure

Indoor or outdoor use

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: ERC6a, ERC7

3.3.2. Worker exposure: PROC8b, PROC9

Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

Route of exposure and type of effects	Exposure estimate	Assessment conditions	RCR
Dermal - Long-term - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Dermal - Acute - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Acute - Local - Inhalation	2.16 mg/m ³	Indoor or outdoor use, With LEV90%, With RPE95%	0.8

3.3.3. Worker exposure: PROC19

Route of exposure and type of effects	Exposure estimate	Assessment conditions	RCR
Dermal - Long-term - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Dermal - Acute - systemic effects		Since the product has corrosive properties, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario	
Acute - Local - Inhalation	2.16 mg/m ³	Indoor or outdoor use, With LEV90%, With RPE95%	0.8

3.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

3.4.1. Environment

Guidance - Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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Exposure scenario

sulphur dioxide

Annex to the safety data sheet

Reference number: 113

CAS-No.: 7446-09-5 Product form: Substance Physical state: Gas

3.4.2. Health

Guidance - Health	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : www.ebrc.de/mease.html
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