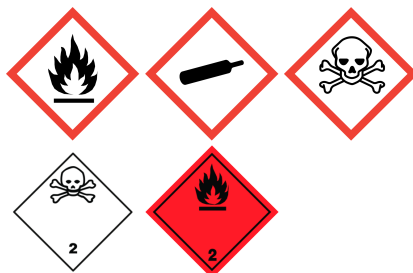


# Safety Data Sheet

## Carbonyl sulphide

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878  
Reference number: SDS-021\_CLP  
Issue date: 11/27/2015 Revision date: 1/17/2023 Version: 3.0

### Danger



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

### 1.1. Product identifier

Trade name : Carbonyl sulphide  
SDS no : SDS-021\_CLP  
Other means of identification : Carbonyl sulphide  
CAS-No. : 463-58-1  
EC-No. : 207-340-0  
EC Index-No. : ---  
  
REACH registration No : Registration not required: Substance manufactured or imported < 1t/y.  
  
Chemical formula : COS

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

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.  
Test gas/Calibration gas.  
Chemical reaction / Synthesis.  
Laboratory use.  
Use for manufacture of electronic/photovoltaic components.  
Contact supplier for more information on uses.  
Industrial use. 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

Air Liquide UK Ltd.  
Station Road Coleshill  
B46 1JY Birmingham  
United Kingdom  
[safety.aluk@airliquide.com](mailto:safety.aluk@airliquide.com)

### 1.4. Emergency telephone number

Emergency telephone number : 01675 462695 (Available 24/7)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

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

Physical hazards	Flammable gases, Category 1B	H221
	Gases under pressure : Liquefied gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 3	H331

### 2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H221 - Flammable gas.  
H280 - Contains gas under pressure; may explode if heated.  
H331 - Toxic if inhaled.

Precautionary statements (CLP)

- Prevention

: P260 - Do not breathe gas, vapours.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.  
No smoking.

- 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.  
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 - In case of leakage, eliminate all ignition sources.

- Storage

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

### 2.3. Other hazards

Contact with liquid may cause cold burns/frostbite.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Carbonyl sulphide	CAS-No.: 463-58-1 EC-No.: 207-340-0 EC Index-No.: --- REACH registration No: *3	100	Flam. Gas 1B, H221 Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331

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

\*1: Listed in Annex IV / V REACH, exempted from registration.

\*3: Registration not required: Substance manufactured or imported < 1t/y.

### 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

: In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

- 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**

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.  
May act principally on the central nervous system, with death resulting from respiratory paralysis.  
See section 11.

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

Obtain medical assistance.

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

- Suitable extinguishing media : Water spray or fog.  
Dry powder.  
Carbon dioxide.  
Shutting off the source of the gas is the preferred method of control.  
Be aware of the risk of formation of static electricity with the use of CO2 extinguishers. Do not use them in places where a flammable atmosphere may be present.
- 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 : Carbon monoxide. Sulphur dioxide.

### **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.  
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.  
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.  
Eliminate ignition sources.  
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

- : Monitor concentration of released product.
- Consider the risk of potentially explosive atmospheres.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- See section 5.3 of the SDS for more information.

### **6.2. Environmental precautions**

- Try to stop release.

### **6.3. Methods and material for containment and cleaning up**

- Ventilate area.

### **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 atmosphere.
- 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.
- Avoid suck back of water, acid and alkalis.
- Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
- Purge air from system before introducing gas.
- Take precautionary measures against static discharge.
- Keep away from ignition sources (including static discharges).
- Consider the use of only non-sparking tools.
- Ensure equipment is adequately earthed.

Safe handling of the gas receptacle

- : Refer to supplier's container handling instructions.
- 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 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

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 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.  
Segregate from oxidant gases and other oxidants in store.  
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

DNEL (Derived-No Effect Level) : None available.

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

### 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 when transfilling or breaking transfer connections.  
Standard EN 166 - Personal eye-protection - specifications.
- Skin protection :
  - Hand protection : Wear working gloves when handling gas containers.  
Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.  
Wear cold insulating gloves when transfilling or breaking transfer connections.  
Standard EN 511 - Cold insulating gloves.
  - Other : Consider the use of flame resistant anti-static safety clothing.  
Standard EN ISO 14116 - Limited flame spread materials.  
Standard EN 1149-5 - Protective clothing: Electrostatic properties.  
Wear safety shoes while handling containers.  
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

- Respiratory protection
  - : 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.
  - Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
  - Recommended: Filter B (grey).
  - 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.
  - Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
- 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	: Rotten eggs. Odour can persist. Poor warning properties at low concentrations.
Melting point / Freezing point	: -139 °C
	: -139 °C
Boiling point	: -50 °C
Flammability	: Flammable gas.
Lower explosion limit	: Not available.
Upper explosion limit	: Not available.
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: 200 °C
Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: No reliable data available.
Water solubility [20°C]	: 1447 mg/l
Partition coefficient n-octanol/water (Log Kow)	: Not available.
Vapour pressure [20°C]	: 11 bar(a)
Vapour pressure [50°C]	: 22.5 bar(a)
Density and/or relative density	: Not applicable.
Relative vapour density (air=1)	: 2
Particle characteristics	: Not applicable.

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

Explosive properties	: Not applicable.
Explosion limits	: 6.5 – 29 vol %
Oxidising properties	: Not applicable.
Critical temperature [°C]	: 101.8 °C

#### 9.2.2. Other safety characteristics

Molar mass	: 60 g/mol
Evaporation rate	: Not applicable for gases and gas mixtures.
Gas group	: Press. Gas (Liq.).
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

Can form explosive mixture with air.  
May react violently with oxidants.

#### 10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.  
Avoid moisture in installation systems.

#### 10.5. Incompatible materials

Air, Oxidisers.  
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** : Damage to central nervous system.  
Toxic if inhaled.

LC50 Inhalation - Rat [ppm]	850 ppm/4h
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<b>Skin corrosion/irritation</b>	: No known effects from this product.
<b>Serious eye damage/irritation</b>	: No known effects from this product.
<b>Respiratory or skin sensitisation</b>	: No known effects from this product.
<b>Germ cell mutagenicity</b>	: No known effects from this product.
<b>Carcinogenicity</b>	: No known effects from this product.
<b>Toxic for reproduction : Fertility</b>	: No known effects from this product.
<b>Toxic for reproduction : unborn child</b>	: No known effects from this product.
<b>STOT-single exposure</b>	: No known effects from this product.
<b>STOT-repeated exposure</b>	: No known effects from this product.
<b>Aspiration hazard</b>	: Not applicable for gases and gas mixtures.

#### 11.2. Information on other hazards

No additional information available

### SECTION 12: Ecological information

#### 12.1. Toxicity

Assessment	: No data available.
EC50 48h - Daphnia magna [mg/l]	: No data available.
EC50 72h - Algae [mg/l]	: No data available.
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 : No data available.

### 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 :

### 12.7. Other adverse effects

Other adverse effects : No known effects from this product.

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.  
Do not discharge into areas where there is a risk of forming an explosive mixture with air.  
Waste gas should be flared through a suitable burner with flash back arrestor.  
Must not be discharged to atmosphere.  
Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.  
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.  
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. : 2204

### 14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : CARBONYL SULPHIDE

Transport by air (ICAO-TI / IATA-DGR) : Carbonyl sulphide

Transport by sea (IMDG) : CARBONYL SULPHIDE

### 14.3. Transport hazard class(es)

Labelling



2.3 : Toxic gases.  
2.1 : Flammable gases.



### Transport by road/rail (ADR/RID)

Class	: 2
Classification code	: 2TF
Hazard identification number	: 263
Tunnel Restriction	: B/D - Tank carriage : Passage forbidden through tunnels of category B, 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 (2.1)
Emergency Schedule (EmS) - Fire	: F-D
Emergency Schedule (EmS) - Spillage	: S-U

### 14.4. Packing group

Transport by road/rail (ADR/RID)	: 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 (ADR/RID)	: 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 (ADR/RID)	: 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.
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### 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	: Carbonyl sulphide is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.
Seveso Directive : 2012/18/EU (Seveso III)	: Covered.

#### National regulations

Regulatory reference	: Ensure all national/local regulations are observed.
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### 15.2. Chemical safety assessment

A CSA has not yet 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 - European 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.
Training advice	: Ensure operators understand the flammability hazard. Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard.
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 <a href="http://www.Eiga.eu">http://www.Eiga.eu</a> .

Full text of H- and EUH-statements	
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Flam. Gas 1B	Flammable gases, Category 1B
H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.
H331	Toxic if inhaled.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

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.
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