



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Carbonyl Sulfide**

Chemical formula : COS

Synonyms : Carbon monoxide monosulfide; Carbon oxide sulfide; Carbon oxysulfide; Dithiocarbonic anhydride, Oxycarbon sulfide

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Carbonyl Sulfide	463-58-1	99+%

3. Hazards Identification

Emergency Overview

Toxic, flammable liquid and gas under pressure.
May be fatal if inhaled.
Can form explosive mixtures with air.
May cause respiratory tract and central nervous system damage.
Can cause eye irritation.
Gas deadens sense of smell.
Symptoms may be delayed.

Potential Health Effects

Inhalation : May be fatal if inhaled. Can cause respiratory paralysis or depression of the central nervous system. Overexposure may cause headache, dizziness, confusion, nausea, vomiting, diarrhea, unconsciousness, and death. Rhinitis, pharyngitis, bronchitis (irritation of nose and throat passage); pneumonitis, cyanosis (bluish discoloration of the skin due to lack of oxygen); and pulmonary edema (fluid in the lungs) may also occur. Lack of oxygen can kill.

Eye contact : May cause painful conjunctivitis (inflammation) of the connective tissues of the eye, photophobia (intolerance of light), and corneal opacification (clouding of the tissues covering the eye).

Skin contact : May irritate the skin causing local redness and pain; liquid may be corrosive and cause frostbite. Prolonged contact may result in absorption of harmful amounts of carbonyl sulfide.

Ingestion : A highly unlikely route of exposure. This product is a gas at normal temperature and pressure. Frostbite of the mouth and lips may occur from contact with the liquid. Carbonyl sulfide is harmful if swallowed.

Chronic Health : May cause nausea, vomiting, weight loss, persistent low blood pressure, and

Hazard loss of the sense of smell. May cause neurologic sequelae such as amnesia, intention tremor, neurasthenia, disturbance of equilibrium, or more serious brain stem and cortical damage. Inhalation may aggravate asthma and inflammatory of fibrotic pulmonary disease. The skin-irritating properties of Carbonyl Sulfide may aggravate an existing dermatitis.

4. First Aid Measures

General advice : None.

Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

Skin contact : Immediately remove contaminated clothing and flush skin with plenty of water. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105 F (41 C). In case of massive exposure, remove contaminated clothing while showering with warm water. Discard clothing and shoes. Call a physician.

Ingestion : An unlikely route of exposure; this product is gas at normal temperature and pressure.

Inhalation : Immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician immediately. Keep victim warm and at rest.

5. Fire-Fighting Measures

Suitable extinguishing media : Carbon dioxide, dry chemical, water spray, or fog.

Specific hazards : May form explosive mixtures with air and oxidizing agents. Heat of fire can build pressure in cylinder and cause it to rupture. No part of a cylinder should be subjected to a temperature higher than 125 F (52 C). Carbonyl sulfide cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT). Reverse flow into cylinder may cause rupture. If venting or leaking product catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at location distant from product handling point. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with an approved explosion meter.

Fire fighting : DANGER! Toxic, flammable liquid and gas under pressure. Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately spray containers with water from maximum distance until cool, taking care not to extinguish flames. Remove sources of ignition if without risk. Remove all containers from fire area if without risk; continue cooling water spray while moving containers. Do not extinguish any flames emitted from containers; stop flow if without risk, or allow flames to burn out. Reapproach with extreme caution using self-contained breathing apparatus and protective clothing. On site fire fighters must comply with OSHA 29 CFR 1910.156.

6. Accidental Release Measures

Personal precautions : None.

Environmental precautions : Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations. If necessary, call your local supplier for assistance.

Methods for cleaning up : May form explosive mixtures with air. Immediately evacuate all personnel from danger area. Reverse flow into cylinders may cause rupture. Use self-contained breathing apparatus and protective clothing where needed. Remove all sources

of ignition if without risk. Reduce vapors with fog or fine water spray. Shut off leak if without risk. Ventilate area or move cylinder to a well-ventilated area. Flammable vapors may spread from spill. Before entering area, especially a confined area, check atmosphere with an appropriate device.

Additional advice : None.

7. Handling and Storage

Handling

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide or drop. All piped carbonyl sulfide system and associated equipment must be grounded. Electrical equipment must be non-sparking or explosion-proof. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

Storage

Store and use with adequate ventilation. Separate cylinders containing this product from oxygen, chlorine, and other by at least 20 ft (6.1 m), or use a barricade of noncombustible material. This barricade should be at least 5 ft (1.53 m) high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection caps firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 125 F (52 C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

8. Exposure Controls / Personal Protection

Engineering measures

Local exhaust – an explosion-proof system is acceptable. Use only in a closed system. An explosion-proof, forced draft fume hood is preferred.

Personal protective equipment

Respiratory protection : Use an air-supplied respirator with a full-face, positive-pressure, self-contained breathing apparatus. Respiratory protection must conform to OSHA 29 CFR 1910.134. Select per OSHA 29 CFR 1910.134 and ANSI Z88.2.

Hand protection : Wear work gloves when handling containers; Neoprene gloves where contact with product may occur.

Eye protection : Wear safety glasses and a full face shield.

Skin and body protection : Metatarsal shoes for container handling and protective clothing where needed. Regardless of protective equipment, never touch live electrical parts.

Remarks : None.

9. Physical and Chemical Properties

Form : Gas.

Color : Colorless.

Odor : Rotten eggs odor.

Molecular weight : 60.07

Vapor pressure : 174.7 psig (1204.5 kPa) @ 70 F (21.1 C)

Vapor density : Not applicable.

Specific gravity : 2.074 @ 70 F (21.1 C) (air = 1)

Boiling point : -58.27 F (-50.15 C)

Melting point : -217.84 F (-138.8 C)

Water solubility : Reacts slowly, 1.33 cm³/ cm³

10. Stability and Reactivity

Stability : Stable under normal conditions.
Conditions to avoid : None known.
Materials to avoid : Hydrogen, moisture, oxidizing agents, all alkalis. In the presence of moisture, some metals such as brass are attacked.
Hazardous decomposition products : Thermal decomposition or burning may produce CO, CO₂, SO₂, CS₂, sulfur.

11. Toxicological Information

Toxicity Data

Inhalation, LC50 1 hr, mouse = 1700 ppm.

Acute Health Hazard

Ingestion : Not available.
Inhalation : Not available.
Skin : Not available.

12. Ecological Information

No known effects.

13. Disposal Considerations

Waste from residues / unused products : Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier. For emergency disposal, secure cylinder in a well-ventilated area or outdoors; then slowly discharge gas to the atmosphere. Keep waste from contaminating the surrounding environment. Keep personnel away.
Contaminated packaging : Return cylinder to supplier.

14. Transport Information

DOT (US only)

Proper shipping name : Carbonyl Sulfide
Class : 2.3
UN/ID No. : UN2204
Labeling : Poison Gas, Flammable Gas

Further information

Cylinders should be transported in a secure upright position in a well ventilated truck.

15. Regulatory Information

OSHA Process Safety (29 CFR 1910.119) Hazard Class(es)

Carbonyl Sulfide is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable gas on site in one location in quantities of 10,000 lb (4536 kg) or greater is covered under this regulation unless the gas is used as a fuel.

TCSA

Material is listed in TSCA inventory.

SARA Sections 302/304 (40 CFR 355)

Threshold Planning Quantity (TPQ): None

Extremely Hazardous Substances (EHS) RQ: None

SARA Sections 311/312

Immediate: Yes

Delayed: Yes

Pressure: Yes

Reactivity: No

Fire: Yes

SARA Section 313 (40 CFR 372.65)

Carbonyl sulfide is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372.

CERCLA (40 CFR Parts 117 and 302)

Reportable Quantity (RQ): 100 lb (45.4 kg)

16. Other Information

Prepared by : Specialty Gases of America, Inc.

For additional information, please visit our website at www.americangasgroup.com.