

MATERIAL SAFETY DATA SHEET (MSDS) COSMIC

(Please ensure that this MSDS is received by the appropriate person)

DATE: January 2018 Version 3 Ref. No.: MS016

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name COSMIC

Chemical Formula COS

Synonym(s) Carbonyl Sulphide, Carbonyl Sulfide, Carbon Oxysulphide, COS

Use(s) FUMIGANT
INDUSTRIAL APPLICATIONS

Company Identification African Oxygen Malawi Limited
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2 HAZARDS IDENTIFICATION

Main Hazards: Extremely flammable and Toxic by inhalation.

Adverse Health Effects: Irritating to the eyes, mucous membranes and respiratory system. Narcotic at high concentrations. May decompose into hydrogen sulphide within body tissues resulting in inhibition of cellular respiration, possible pulmonary paralysis, sudden collapse and death

Eye effects: Low concentration will generally cause irritation to the conjunctiva. Repeated exposure to low concentrations is reported to cause conjunctivitis, photo phobia, corneal bullae, tearing, pain and blurred vision.

Skin Effects: May irritate skin upon contact.

Ingestion Effects: Ingestion is unlikely

Inhalation Effects: Irritating and narcotic at high concentrations. May decompose into hydrogen sulphide within body tissues. Hydrogen sulphide reacts with enzymes in the bloodstream and inhibits cellular respiration resulting in pulmonary paralysis, sudden collapse and death. Continuous exposure to low (15-50 ppm) concentrations will generally cause irritation to mucous membranes, and may also cause headache, dizziness or nausea. Higher concentrations (200-300 ppm) may result in respiratory arrest leading to coma or unconsciousness. Exposure for more than 30 minutes at concentrations greater than 700 ppm has been fatal.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Chemical Name: Carbonyl Sulphide
Chemical Abstract Service Number (CAS No.): 463-58-1

4 FIRST AID MEASURES

Eyes: Persons with potential exposure to carbonyl sulphide should not wear contact lenses. Flush contaminated eyes with large amounts of water for at least 15 minutes. Part eyelids with fingers to ensure complete flushing. If irritation persists, seek medical attention immediately

Skin: Flush affected area with water. If irritation persists, consult a physician.

Ingestion or Swallowing: Due to product form and application, ingestion is considered unlikely however if ingested treat a manner similar to inhalation exposure. Seek medical attention as soon as possible.

Inhalation: Prompt medical attention is mandatory in all cases of overexposure. Rescue personnel should be equipped with self-contained breathing apparatus and should recognize the hazard of over exposure due to olfactory fatigue. An extreme fire hazard exists when rescuing semiconscious persons due the flammability hazard. Avoid use of rescue equipment which may contain ignition sources or cause static discharge. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminate area is most important. If breathing has stopped, administer artificial resuscitation and supplemental oxygen or a mixture of 5% carbon dioxide in oxygen. Keep victim calm and warm. Further treatment should be symptomatic and supportive. Seek medical assistance immediately

5 FIRE FIGHTING MEASURES

Specific hazards

Exposure to fire may cause containers or vessels to rupture/explode. If involved in fire, it produces Sulphur dioxide and Carbon monoxide fumes. Carbonyl sulphide is heavier than air and may accumulate in low areas and may travel a considerable distance to a source of ignition. Should flame be extinguished and flow of gas continue, increase ventilation to prevent flammable mixture formation in low areas or pockets. Product may explode or burn over a wide range of mixtures in air.

Extinguishing media

All known extinguishants can be used.

Firefighting instructions

If possible, stop the flow of the product by slowly closing the cylinder valve. Move the container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Special protective equipment for fire fighters

Fire fighters should use self-contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions

Evacuate the area. Eliminate ignition sources. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe

Environmental Protection

Try to stop release. Prevent from entering sewers/drains, basements and workpits, or any place where its accumulation can be dangerous.

Clean up methods

Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated.

7 HANDLING AND STORAGE

Electrical Classification

Class I, Group D. Earth-ground and bond all lines and equipment associated with the Carbonyl Sulphide system. All electrical equipment should be non-sparking or explosion proof.

Anhydrous carbonyl sulphide can be handled at normal temperatures with most metals. Moist carbonyl sulphide should be handled in aluminium alloys 24 and 35, 316 stainless steel or 18-8 chromium-nickel steels. Teflon®, Kel-F®, Viton® or Nylon® is preferred gasket materials.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to the use point.

Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<400 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the system. Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency

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exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C).

Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post **"NO SMOKING OR OPEN FLAMES"** signs in the storage area or use area. There should be no sources of ignition in the storage area.

Never carry a compressed gas cylinder or container of gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value

Value type	Value	Note
TLV (ACGIH)	10 ppm	ACGIH 1995 - 1996

Occupational Exposure Hazards

Avoid any areas where spillage has taken place unless entering with self contained breathing apparatus. Only enter once testing has proved the atmosphere to be safe.

Engineering Control Measures

Hood with force ventilation. Use local exhaust to prevent accumulation above exposure limit.

Personal Protection

Gas tight chemical goggles or full-face piece respirator. Neoprene, butyl rubber, PVC or polyethylene protective gloves. Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use. Safety shoes, safety shower, eyewash should also be used.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	COS
Molecular Weight	60.07g/mol
Boiling point @ 101,325 kPa	-50.2°C
Density, Liquid @ saturation pre @ -80°C	1.238 kg/l
Relative density (Air = 1) @ 101,325 kPa	2.10
Latent heat of fusion @ -138.8°C	78.66 kJ/kg
Colour	Colourless

Taste	None
Odour	Rotten eggs

10 STABILITY AND

REACTIVITY Stability and reactivity

Can form explosive mixture with air. Thermal decomposition yields toxic products which can be corrosive in the presence of moisture. May react violently with oxidants.

Incompatible Materials

Reacts with oxidizers and form explosive mixtures with oxygen. Hydrolyzes slowly in water, forming hydrogen sulphide and carbon dioxide.

11 TOXICOLOGICAL INFORMATION

Health Hazard Summary: Toxic. Inadequate odour warning due to olfactory fatigue. Formation of hydrogen sulphide by decomposition in the lungs and adsorption into the blood stream is suspected. At low concentrations, marked dryness and irritation of the nose and throat occurs. Prolonged exposure may cause runny nose, cough, hoarseness, shortness of breath and pneumonia. At higher concentrations, there is a temporary loss of smell, severe irritation, headache, nausea, vomiting and dizziness occur. Concentrations around 300 ppm can be rapidly fatal.

12 ECOLOGICAL INFORMATION

Due to the volatility of Carbonyl sulphide, accumulation is unlikely to occur in soils and water, as evidenced by naturally produced carbonyl sulphide not accumulating in oceans and soils. Organisms that encounter high concentrations of carbonyl sulphide for extended periods of time will be killed. Ensure that appropriate measures are taken to prevent this product from entering the environment other than its use within the fumigation risk area. Does not contain class I or II ozone depleting chemicals

13 DISPOSAL CONSIDERATIONS

General: Avoid discharge to atmosphere.

Do not discharge into any place where accumulation could be dangerous. 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. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

United Nations Number (UN No.):	2204
Hazchem warning:	2.3 Poison gas, Flammable gas

Other transport information:

Ensure vehicle driver is aware of 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 they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

15 REGULATORY INFORMATION

EEC Hazard class: flammable

National legislation: OHSact and Regulations 85 of 1993.

Reference: SANS 10234 and its supplement.

16 OTHER INFORMATION

Ensure operators understand the flammability hazard. Contact with liquid may cause cold burns/frost bite. Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

EXCLUSION OF LIABILITY

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