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 overexposure 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 contaminant 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 Sulfur 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.

Fire fighting 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/drainage systems 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 aluminum 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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8 EXPOSURE CONTROLS/PERSONAL PROTECTION

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Chemical Symbol</td>
<td>COS</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>60.07g/mol</td>
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<tr>
<td>Boiling point</td>
<td>-50.2°C</td>
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<tr>
<td>Density, Liquid @ saturation pre @ -80°C</td>
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<tr>
<td>Relative density (Air = 1) @ 101.325 kPa</td>
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<tr>
<td>Latent heat of fusion @ -138.8°C</td>
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<tr>
<td>Colour</td>
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<tr>
<td>Taste</td>
<td>None</td>
</tr>
<tr>
<td>Odour</td>
<td>Rotten eggs</td>
</tr>
</tbody>
</table>

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 vpm can be rapidly fatal.

Acute Toxicity: Damage to central nervous system. May cause irritation to the respiratory tract. Delayed fatal pulmonary edema possible.

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

In absence of a defined classification in SANS 10234:2008 the EC classification has been adopted:

EC Classification
T; R23 I F+; R12 F+ Extremely Flammable T Toxic

Labelling Symbols:
Risk Phrase Description
R 12 Extremely Flammible
R 23 Toxic by inhalation

Safety Phrase Description
S9 Keep container in well ventilated area
S16 Keep away from ignition sources – No smoking
S33 Take precautionary measures against static discharges
S36 Wear suitable protective clothing.
S45 In case of accident or if you feel unwell, seek medical advice immediately

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 through material compatibility and safety study should be carried out.

EXCLUSION OF LIABILITY

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