

MATERIAL SAFETY DATA SHEET (MSDS) HYDROGEN SULPHIDE (H₂S)

Please ensure that this MSDS is received by the appropriate person

DATE: April 2011

Version 2

Ref. No.: MS033

bullae, tearing, pain and blurred vision.

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name HYDROGEN SULPHIDE

Chemical Formula H₂S

Trade Name Hydrogen Sulphide

Company Identification African Oxygen Limited
23 Webber Street
Johannesburg, 2001
Tel. No: (011) 490-0400
Fax No: (011) 490-0506

EMERGENCY NUMBER 0860111185 or (0860 02 02 02)
(24 hours)

Skin Contact May irritate the skin upon contact

Ingestion Ingestion is unlikely. Hydrogen sulfide will irritate the mucous membranes causing a burning feeling with excess salivation likely. Irritation of the gastrointestinal tract may also occur.

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Hydrogen Sulphide

Chemical Abstract Service Number (CAS No.):
07783-06-04

UN No.: 1053

ERG No.: 117

4 FIRST AID MEASURES

Inhalation: Very toxic by inhalation. May cause damaging effects to central nervous system, metabolism and gastrointestinal tract. Prolonged exposure to small concentrations may result in pulmonary oedema. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Delayed adverse effects possible.

Skin/Eye: Remove contaminated clothing. In case of frostbite spray with water for at least 15minutes. Apply a sterile dressing. Immediately flush eyes thoroughly with water for at least minutes. Obtain medical assistance.

Ingestion: It is not considered a potential route of exposure

3. HAZARDS IDENTIFICATION

Main Hazards in concentrations of 20 to 50ppm, hydrogen sulphide irritates the eyes. Slightly higher concentrations irritate The upper respiratory tract and, may result in pulmonary edema.

Inhalation of 500ppm for 30 minutes produces headache, dizziness, excitement, staggering, and gastroenteric disorder, followed in some cases by bronchitis and bronchial pneumonia.

Concentrations above 600ppm can be fatal within 30 minutes through respiratory paralysis.

Although the foul odor of hydrogen sulphide is readily detectable in low concentrations, it becomes unreliable as a warning of dangerous concentrations of gas since continuous inhalation leads rapidly to olfactory fatigue.

Vapour Inhalation Hydrogen sulfide 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. Exposures for more than 30minutes at concentrations greater than 700 ppm have been fatal.

Continuous inhalation of low concentrations may cause olfactory fatigue or paralysis of the sense of smell. Thus, detection of hydrogen sulfide by its odor is not effective.

Eye Contact Low concentrations will generally cause irritation to the conjunctiva. Repeated exposure to low concentrations is reported to cause conjunctivitis, photo phobia, corneal

5 FIRE FIGHTING MEASURES

Extinguishing media Suitable extinguishing media: all known extinguishants can be used.

Specific Hazards Exposure to fire may cause containers to rupture/explode. Hazardous combustion products: If involved in a fire, the following toxic and/or corrosive fumes may be produced by thermal decomposition: Sulfur dioxide, Suitable extinguishing media: all known extinguishants can be used.

Emergency Actions stop flow of product if possible. Move away from the container and cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Protective Clothing Use a self contained breathing apparatus and chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

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

Environmental Precautions Do not allow the product from entering sewers and storm water drains.

Methods for cleaning up Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated, that is ground free from frost

MATERIAL SAFETY DATA SHEET (MSDS) HYDROGEN SULPHIDE (H₂S)

Please ensure that this MSDS is received by the appropriate person

7 HANDLING AND STORAGE

Ensure equipment is adequately earthed.
Purge air from system before introducing gas.
Do not allow backfeed into the container.
Cylinders should be stored upright and prevented from falling.
Suck back of water into the container must be prevented.
Use only properly specified equipment, which is suitable for this product, its supply pressure and temperature.
Contact your gas supplier if in doubt.
Keep away from ignition sources (including static discharges).
Secure them away from flammable or combustible materials; in a dry, well ventilated constructed of non-combustible material with firm level floor.
Keep container below 50 deg. Celsius in a well ventilated place.
Use the "first in – first out" inventory system to prevent full cylinders from being stored for excessive period of time. Compliance of all relevant legislation is essential. Keep away from children

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

| | |
|--------------------------------------|---|
| Occupational exposure hazards | Hydrogen sulfide – TLV: 10ppm; STEL: 15ppm |
| Engineering control measures | Filling or withdrawal from a Hydrogen Sulfide cylinder must be performed in a well ventilated area and if possible should be in a forced ventilation system or using a hood over the valve. |

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

| | |
|--|--------------------------|
| Chemical Symbol | H ₂ S |
| Molecular Weight | 34.08 g/mol |
| Melting point @ 224 kPa | -86°C |
| Appearance/Colour: | Colourless gas |
| Odour: | Rotten eggs |
| Relative density, Gas @ 101.325kPa @ 25°C | 1.188 |
| Specific Volume @ 21.1°C, 101.325 kPa | 70.11dm ³ /kg |
| Dielectric constant; Gas @ 0°C, @ 101.325kPa 1.004 | |

10 STABILITY AND REACTIVITY

| | |
|-------------------------------|--|
| Conditions to avoid | avoid heat, flames, sparks and other source of ignition. Minimise contact with material Avoid inhalation of material or combustion by products. Keep out of water suppliers and sewers. |
| Incompatible Materials | Do not store reserve stocks of hydrogen sulphide cylinder with cylinders containing oxygen or other highly oxidising or combustible materials. |

11 TOXICOLOGICAL INFORMATION

| | |
|----------------------|---------|
| Acute Toxicity | unknown |
| Skin & eye contact | unknown |
| Chronic Toxicity | unknown |
| Carcinogenicity | unknown |
| Mutagenicity | unknown |
| Reproductive Hazards | unknown |

12 ECOLOGICAL INFORMATION

General: Toxic to water organisms.

13 DISPOSAL CONSIDERATIONS

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

14 TRANSPORT INFORMATION

| | |
|--------------------|---|
| UN No. | 1053 |
| Class | 2,3 |
| ADR/RID Item Nr. | 2,2 deg. TIF |
| ADR/RID Hazard Nr. | 263 |
| Labelling ADR | Label 6.1 Toxic Substance Label 3 Flammable substance |

Other transport information Avoid transport on vehicles where load space is not separated from the driver's compartment. 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 and valve outlet cap, nut or plug (where provided) is correctly fitted. Valve protection device (where provided) is correctly fitted. Ensure that there is adequate ventilation. Comply with applicable transport regulation.

15 REGULATORY INFORMATION

| | |
|-----------------------|--|
| Risk phrases | R26 Very toxic by inhalation |
| Safety phrases | S (1/2) Keep locked up and out of reach of children S9 Keep container in a well ventilated place S16 Keep away from ignition sources – No smoking S28 After contact with skin, immediately wash with plenty of ... (to be specified by manufacturer) S36/37 Wear suitable protective clothing and gloves S45 In case of accident or if you feel unwell, seek medical advice immediately S61 Avoid release into environment; refer to special instructions/material safety data sheet |

Reference: SANS 10265

16 OTHER INFORMATION

Ensure all national/local regulations are observed. Ensure operators understand the asphyxiation hazard.

Bibliography
Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases – 3rd Edition
Matheson Gas Data Book – 6th Edition

EXCLUSION OF LIABILITY

Whilst AFROX made best endeavour to ensure that the information contained in this publication is accurate at the date of publication, AFROX does not accept liability for an inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.