

Intermountain Specialty Gases

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MATERIAL SAFETY DATA SHEET

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1. CHEMICAL PRODUCT

PRODUCT NAME: Hydrogen Sulfide/Oxygen/Nitrogen

SYNONYMS: Hydrogen Sulfide/Oxygen/Nitrogen

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	TLV
Hydrogen Sulfide	H ₂ S	7783-06-4	5 ppm -200 ppm	10
Oxygen	O ₂	7782-44-7	12.0% - 21.0%	N/A
Nitrogen	N ₂	7727-37-9	Balance	S/A

IDLH: 100 PPM (H₂S)

3. HAZARD IDENTIFICATION

POTENTIAL HEALTH EFFECTS: Colorless gas with characteristic "rotten egg" odor. The odor cannot be relied on as an adequate warning of the presence of Hydrogen Sulfide, because olfactory fatigue occurs. Irritating to the eyes, mucous membranes and respiratory system. Hydrogen sulfide can cause respiratory paralysis, sudden collapse and death. Lethal concentrations of hydrogen sulfide cause respiratory paralysis and breathing stops. Life threatening pulmonary edema is common following prolonged exposure to concentrations between 250 and 600 ppm. Edema has been reported following prolonged exposure at concentrations as low as 50 ppm.

Sense of smell becomes rapidly fatigued and cannot be used as warning of exposure.

ROUTES OF ENTRY: Inhalation

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: May aggravate pre-existing eye, skin, respiratory and central nervous system (CNS) disorder.

OTHER EFFECTS OF OVEREXPOSURE: Contact with rapidly expanding gas near the point of release may cause frostbite.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

Carcinogenicity (US Only):

NTP – No

IARC MONOGRAPHS - No

OSHA REGULATED – No

Hazard Codes:

Health: 1

Flammability: 0

Instability: 0

HMIS Hazard Codes:

Health: 1

Flammability: 0

Physical Hazard: 3

Rating System

0 = No Hazard

1 = Slight Hazard

2 = Moderate Hazard

3 = Serious Hazard

4 = Severe Hazard

4. First Aid Measures

Inhalation: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Further treatment should be symptomatic and supportive. Seek immediate medical attention.

Note to physician: Acute hydrogen sulfide poisoning can be treated by induction of methemoglobinemia through parenteral injection of methemoglobin generating agents (i.e. sodium nitrite). This acts as an antidote by restoring the normal activity of the sulfide inhibited enzyme.

Eye Contact: Immediately flush with copious amounts of water for at least 15 minutes.

Skin contact: Immediately flush with copious amount of water for at least 15 minutes.

Ingestion: None\

5. Fire Fighting Measures

Flash Point: N/Ap Gas

Autoignition Temperature: N/Ap

Flammable Limits: Nonflammable Gas

Lower:

Upper:

Extinguishing Media: Use what is appropriate for surrounding fire.

Special Fire fighting Instruction and Equipment: Wear self-contained breathing apparatus and full protective clothing. Keep fire from exposed cylinders and cool with water spray, If possible, stop the product flow.

Hazardous Combustion Products: None

Unusual Fire and Explosion Hazards: Cylinder rupture may occur under fire conditions.

6. Accidental Release Measures

Clean Up Procedures: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off cylinder if possible.

Specialized Equipment: None

7. Handling and Storage

Precautions To Be Taken In Handling: Secure cylinder when using to protect from falling.

Precautions To Be Taken In Storage: Protect cylinders from physical damage. Store in cool, dry, well ventilated area. Do not allow the temperature where cylinders are stored to exceed 125 degrees F.

Do not rely on the olfactory sense to detect the presence of hydrogen sulfide. Analytical devices and instrumentation are readily available for this purpose.

8. Exposure Controls/Personal Protection

Engineering Controls: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure limits and to avoid asphyxiation.

Eye/Face Protection: Safety goggles or glasses as appropriate for the job.

Skin Protection: Protective gloves of material appropriate for the job.

Respiratory Protection: In case of leakage, use of self-contained breathing apparatus should be available for emergency use.

Other Protective Equipment: Safety Shoes

9. Physical And Chemical Properties

Appearance: Colorless

Odor: Rotten Egg Odor

Physical State: Gas

Vapor Pressure: N/Ap

Vapor Density (Air = 1): 1.0 - 1.010

Boiling Point (C): N/Ap

Solubility In Water: Slightly

Specific Gravity (H₂O-1): Gas

Evaporation Rate: Gas

Odor Threshold: N/A

10. Stability and Reactivity

Stability: Stable under normal storage conditions.

Conditions To Avoid: Storage in poorly ventilated areas. Storage near a heat source.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition: none

11. Toxicological Information

Lethal Concentration: Inhalation of 1000-3000 ppm (dogs) was lethal. Respiration cease after several breaths at 3000 ppm and death occurred within 15-20 minutes at concentrations of 1000 ppm.

Teratogenicity: N/Ap

Reproductive Effects: N/Ap

Mutagenicity: N/Ap

12. Ecological Information

Hydrogen sulfide does not absorb solar radiation and therefore does not undergo photolysis or photochemical reaction with oxygen. The persistence of hydrogen sulfide in the atmosphere is dependent on season, latitude and atmospheric conditions, ranging from 1 to 40 days with decreased temperatures and decreased levels of hydroxide in northern regions increasing residence time. In soil and water, hydrogen sulfide is oxidized to elemental sulfur by microorganisms via oxidation-reduction reactions, which form part of the global sulfur cycle.

13. Disposal Considerations

Waste Disposal Method: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood, or return to Intermountain Specialty Gases.

14. Transport Information

Proper Shipping Name: Compressed Gas N.O.S. (Hydrogen Sulfide, Nitrogen) or (Hydrogen Sulfide, Air)

Hazard Class: 2.2

Identification Number: UN 1956

Shipping Label: Nonflammable Gas

15. Regulatory information

SARA Title III Notifications and Information: Hydrogen Sulfide is listed as extremely hazardous substance (EHS) subject to state and local reporting under Section 304 of SARA Title III (EPCRA). The presence of hydrogen sulfide in quantities in excess of the threshold planning quantity (TPQ) of 500 pounds requires certain emergency planning activities to be conducted.

SARA Title III – Hazard classes:

Sudden Release of Pressure Hazard

California Proposition 65:

This product does not contain ingredients (s) Known to the State of California to cause cancer or reproductive toxicity.

SARA Title III – Section 313 Supplier Notification: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right – To-Know Act (EPCRA) of 1986 and of 40 CFR 372:
CAS # 7783-06-4 Ingredient Name (Hydrogen Sulfide) % by Vol. (200 ppm)

16. Other Information

Other Precautions: Protect containers from physical damage. Do not deface cylinders or labels.

Abbreviations:

N/Ap – Not Applicable

N/Av – Not Available

SA – Simple Asphyxiant

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