



# Material Safety Data Sheet

## HYDROGEN SULFIDE

August 31, 1995

PHILLIPS 66 COMPANY	PHONE NUMBERS
A Division of Phillips Petroleum Company	Emergency: (918) 661-8118
Bartlesville, Oklahoma 74004	General MSDS Information: (918) 661-8327
	For Additional MSDSs: (918) 661-5952

### A. Product Identification

Synonyms: Sulfuretted Hydrogen; Hepatic Gas; Hydrosulfuric Acid  
 Chemical Name: Hydrogen Sulfide  
 Chemical Family: Inorganic Acid  
 Chemical Formula: H<sub>2</sub>S  
 CAS Reg. No.: 7783-06-4  
 Product No.: Not Established

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product is in U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals; hence, it may be subject to applicable TSCA provisions and restrictions.

### B. Hazardous Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Hydrogen Sulfide	7783-06-4	100	10 ppm	10 ppm@

@ Short term exposure limit is 15 ppm.

### C. Personal Protection Information

Ventilation: Use adequate ventilation to control exposure below recommended levels.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator. If conditions immediately dangerous to life or health (IDLH) exist, use NIOSH/MSHA approved self-contained breathing apparatus (SCBA) equipment.

Eye Protection: For splash protection use chemical goggles and face shield.

Skin Protection: Gloves and coveralls of rubber or neoprene construction if liquid contact could occur. Avoid

unnecessary skin contamination with material.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

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## D. Handling and Storage Precautions

Proper personal protective equipment must be used when handling this chemical.

Do not get liquefied gas into eyes, on skin, or on clothing. May cause freeze burns upon direct contact. Do not breathe vapor, mist, fume or dust. May be harmful. Launder contaminated clothing before reuse. Use only with adequate ventilation. Wash thoroughly after handling.

Keep away from heat, sparks, and flames. Secure container to prevent damage. Store in a well-ventilated area. Store in tightly closed container. Bond and ground during transfer. Do not puncture or incinerate container.

Handle cylinders with care. Protect cylinders from physical damage. Containers should not be subjected to temperatures above 125F. Do not heat cylinders by any means to increase the product discharge rate. Use a check valve or trap in the discharge line to prevent backflows into the cylinders. All electrical equipment should be non-sparking or explosion proof. Test atmosphere periodically for H<sub>2</sub>S. Do not rely on sense of smell for H<sub>2</sub>S release. Use product in a closed system.

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## E. Reactivity Data

Stability: Stable

Conditions to Avoid: Heat, flame, or other sources of ignition.

Incompatibility (Materials to Avoid): Concentrated nitric acid, sulfuric acid, and other strong oxidizers. Vapors will combust spontaneously when mixed with chlorine, nitrogen trifluoride, or oxygen trifluoride vapors. Distinct hydrogen sulfide odor can be masked by high concentrations of vapors or gas of other chemicals.

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Not Applicable

Hazardous Decomposition Products: Sulfur Oxides formed when burned.

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## F. Health Hazard Data

### Recommended Exposure Limits:

See Section B.

### Acute Effects of Overexposure:

Eye: May be irritating to eyes at levels near the permissible exposure limit. Liquid may cause freeze burns.

Skin: Gas not expected to be irritating to skin. Liquid may cause freeze burns, irritation, reddening or swelling.

Inhalation: Toxic by inhalation. Release of liquefied product may create atmospheres which can rapidly exceed lethal levels. Acute low level exposure that exceeds the permissible exposure limit will result in irritation of the nose and throat, headache, dizziness, nausea, and nervousness.

Ingestion: Liquid may cause freeze burns and death.

### Subchronic and Chronic Effects of Overexposure:

Humans breathing up to 8 ppm of hydrogen sulfide over a two month period experienced nausea, headache, shortness of breath, sleep disturbance, eye and throat irritation.

### Other Health Effects:

The odor of hydrogen sulfide may not be recognized after prolonged inhalation due to paralysis of the sense of smell. Effects from inhaling the fumes may lead to chronic bronchitis, respiratory irritation, increased loss of pulmonary function, and tearing of the eyes.

### Health Hazard Categories:

	Animal	Human		Animal	Human
Known Carcinogen	___	___	Toxic	<u>  X  </u>	<u>  X  </u>
Suspect Carcinogen	___	___	Corrosive	___	___
Mutagen	___	___	Irritant	___	___
Teratogen	___	___	Target Organ Toxin	<u>  X  </u>	<u>  X  </u>
Allergic Sensitizer	___	___	Specify - Skin & Eye Hazard -	Freeze burns;	
Highly Toxic	___	___	Lung Hazard-Irritant;	Nerve Toxin	

### First Aid and Emergency Procedures:

NOTE: For freeze burns, immediately flush effected area with tap water for at least fifteen minutes, seek immediate medical attention.

Eye: Flush eyes with running water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Immediately remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: If illness or adverse symptoms develop, seek medical attention.

Prompt medical attention is mandatory in all cases of overexposure to hydrogen sulfide. Rescue personnel should be equipped with NIOSH/MSHA approved self-contained breathing apparatus (SCBA). Rescue personnel should recognize the hazards of overexposure due to olfactory fatigue. The use of rescue equipment which might contain ignition sources or cause static discharges should be avoided.

Nitrite treatment as medical therapy has been used in persons overexposed to hydrogen sulfide, but the benefits of this treatment are still considered by some to be of questionable usefulness.

Therapy can only be undertaken by qualified emergency medical personnel.

Treatment should be initiated with inhalation of amyl nitrite for fifteen to thirty seconds of each minute until 10 ml of a 3% solution of sodium nitrite can be injected intravenously at a rate of 2.5 to 5 ml per minute. Sodium nitrite injections may be repeated if necessary.

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## G. Physical Data

Appearance: Colorless Gas or Liquefied Gas  
Odor: Repulsive (rotten egg) Odor  
Boiling Point: -75F (-60C)  
Vapor Pressure: 394.0 psia @ 100F (37.8C)  
Vapor Density (Air = 1): 1.176 @ 60F (15.6C)(Calculated)  
Solubility in Water: Slight  
Specific Gravity (H2O = 1): 0.79 @ 60F (15.6C) Saturation Pressure  
Percent Volatile by Volume: 100  
Evaporation Rate (Ethyl Ether = 1): >1  
Viscosity: Not Applicable

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## H. Fire and Explosion Data

Flash Point (Method Used): Flammable Gas  
Flammable Limits (% by Volume in Air): LEL - 4  
UEL - 44

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO2)

Special Fire Fighting Procedures: Shut off source, if possible. Water for or spray may be used to cool exposed containers and equipment. Use NIOSH/MSHA approved self-contained breathing apparatus. Wear protective equipment and/or garments described in Section C.

Fire and Explosion Hazards: Sulfur oxides formed when burned. Vapors are heavier than air and may travel to an ignition source and flashback. Autoignition temperature is 500F (260C).

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## I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source. Ventilate confined area.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):  
Incinerate or place in permitted waste management facility.

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## J. DOT Transportation

Shipping Name: Hydrogen sulfide, liquefied  
Hazard Class: 2.3 (Poisonous gas)  
ID Number: UN 1053

Packing Group: Not applicable

Marking: Hydrogen Sulfide, liquefied, UN1053, RQ\* Inhalation hazard

Label: Poison gas and Flammable gas

Placard: Poisonous gas/1053

Hazardous Substance/RQ: Hydrogen sulfide/100#

Shipping Description: Hydrogen sulfide, liquefied, 2.3 (Poisonous gas), UN 1053, RQ\*, Poison - Inhalation Hazard Zone B

Packaging References: 49 CFR 173.304, 173.314, 173.315

\* Enter the letters "RQ" as shown only if the hazardous substance is present in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) shown for the hazardous substance.

## K. RCRA Classification - Unadulterated Product as a Waste

Ignitable (D001); Hydrogen Sulfide (U135)

Prior to disposal, consult your environmental contact to determine if the TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

## L. Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. If repair of user's equipment is required, purge equipment with an inert gas prior to repairing.

## M. Hazard Classification

This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<input type="checkbox"/> Combustible Liquid	<input type="checkbox"/> Flammable Aerosol	<input type="checkbox"/> Oxidizer
<input checked="" type="checkbox"/> Compressed Gas	<input type="checkbox"/> Explosive	<input type="checkbox"/> Pyrophoric
<input checked="" type="checkbox"/> Flammable Gas	<input checked="" type="checkbox"/> Health Hazard (Section F)	<input type="checkbox"/> Unstable
<input type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Water Reactive
<input type="checkbox"/> Flammable Solid		

Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

## N. Additional Comments

As of the preparation date, this product did not contain a chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

NFPA 704 Hazard Codes - - - - - Signals

Health	: 3	Least - 0
Flammability:	4	Slight - 1
		Moderate - 2

Reactivity : 0  
Special Haz.: -

High - 3  
Extreme - 4

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