

# HYDROGEN SULFIDE

HDS

## CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Gas	Colorless	Rotten egg odor, but odorless at poisonous concentrations
Sinks and boils in water. Poisonous, flammable, visible vapor cloud is produced.			
			Keep people away. Avoid contact with gas. Wear goggles and self-contained breathing apparatus. Shut off ignition sources and call fire department. Evacuate area in case of large discharges. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.
Fire	FLAMMABLE. Flashback along vapor trail may occur. May explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Stop flow of gas if possible. Cool exposed containers and men effecting shutoff with water. Let fire burn.		
Exposure	CALL FOR MEDICAL AID.  VAPOR POISONOUS IF INHALED. Irritating to eyes. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. IF IN EYES, hold eyelids open and flush with plenty of water.		
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge	2.1 CG Compatibility Group: Not listed. 2.2 Formula: H <sub>2</sub> S 2.3 IMO/UN Designation: 2.0/1053 2.4 DOT ID No.: 1053 2.5 CAS Registry No.: 7783-06-4 2.6 NAERG Guide No.: 117 2.7 Standard Industrial Trade Classification: 52242
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Rubber-framed goggles; approved respiratory protection.	
3.2 Symptoms Following Exposure: Irritation of eyes, nose and throat. If high concentrations are inhaled, hyperpnea and respiratory paralysis may occur. Very high concentrations may produce pulmonary edema.	
3.3 Treatment of Exposure: INHALATION: remove victim from exposure; if breathing has stopped, give artificial respiration; administer oxygen if needed; consult physician. EYES: wash with plenty of water.	
3.4 TLV-TWA: 10 ppm	
3.5 TLV-STEL: Not listed.	
3.6 TLV-Ceiling: 15 ppm	
3.7 Toxicity by Ingestion: Hydrogen sulfide is present as a gas at room temperature, so ingestion not likely.	
3.8 Toxicity by Inhalation: Currently not available.	
3.9 Chronic Toxicity: Currently not available	
3.10 Vapor (Gas) Irritant Characteristics: Vapor is moderately irritating such that personnel will not usually tolerate moderate or high vapor concentrations.	
3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.	
3.12 Odor Threshold: 0.0047 ppm	
3.13IDLH Value: 100 ppm	
3.14 OSHA PEL-TWA: Not listed.	
3.15 OSHA PEL-STEL: 50 ppm, 10 minute peak once per 8 hour shift.	
3.16 OSHA PEL-Ceiling: 20 ppm.	
3.17 EPA AEGL: Not listed	

4. FIRE HAZARDS	7. SHIPPING INFORMATION
4.1 Flash Point: Flammable gas	7.1 Grades of Purity: Purified; technical
4.2 Flammable Limits in Air: 4.3%-45%	7.2 Storage Temperature: Ambient
4.3 Fire Extinguishing Agents: Stop flow of gas	7.3 Inert Atmosphere: No requirement
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent	7.4 Venting: Safety relief
4.5 Special Hazards of Combustion Products: Toxic gases are generated in fires.	7.5 IMO Pollution Category: Currently not available
4.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.	7.6 Ship Type: Currently not available
4.7 Auto Ignition Temperature: 500°F	7.7 Barge Hull Type: Currently not available
4.8 Electrical Hazards: Not pertinent	
4.9 Burning Rate: 2.3 mm/min. (liquid)	
4.10 Adiabatic Flame Temperature: Currently not available	
4.11 Stoichiometric Air to Fuel Ratio: 7.1 (calc.)	8. HAZARD CLASSIFICATIONS
4.12 Flame Temperature: Currently not available	8.1 49 CFR Category: Poison gas
4.13 Combustion Molar Ratio (Reactant to Product): 2.0 (calc.)	8.2 49 CFR Class: 2.3
4.14 Minimum Oxygen Concentration for Combustion (MOCC): N <sub>2</sub> diluent: 7.5%; CO <sub>2</sub> diluent: 11.5%	8.3 49 CFR Package Group: Not pertinent
5. CHEMICAL REACTIVITY	8.4 Marine Pollutant: No
5.1 Reactivity with Water: No reaction	8.5 NFPA Hazard Classification:
5.2 Reactivity with Common Materials: No reaction	Category Classification Health Hazard (Blue)..... 3 Flammability (Red)..... 4 Instability (Yellow)..... 0
5.3 Stability During Transport: Stable	8.6 EPA Reportable Quantity: 100 pounds
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent	8.7 EPA Pollution Category: B
5.5 Polymerization: Not pertinent	8.8 RCRA Waste Number: U135
5.6 Inhibitor of Polymerization: Not pertinent	8.9 EPA FWCRA List: Yes
6. WATER POLLUTION	9. PHYSICAL & CHEMICAL PROPERTIES
6.1 Aquatic Toxicity: 1.38 ppm/48 hr/fathead minnows/TL <sub>50</sub> /fresh water sat./0.5 hr/bullia/lethal/salt water	9.1 Physical State at 15°C and 1 atm: Gas
6.2 Waterfowl Toxicity: Currently not available	9.2 Molecular Weight: 34.08
6.3 Biological Oxygen Demand (BOD): Currently not available	9.3 Boiling Point at 1 atm: -76.7°F = -60.4°C = 212.8°K
6.4 Food Chain Concentration Potential: None	9.4 Freezing Point: -117°F = -82.8°C = 190.4°K
6.5 GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 3 Human Oral hazard: 2 Human Contact hazard: II Reduction of amenities: XX	9.5 Critical Temperature: 212.7°F = 100.4°C = 373.6°K
	9.6 Critical Pressure: 1300 psia = 88.9 atm = 9.01 MN/m <sup>2</sup>
	9.7 Specific Gravity: 0.916 at -60°C (liquid)
	9.8 Liquid Surface Tension: (est.) 30 dynes/cm = 0.03 N/m at -61°C
	9.9 Liquid Water Interfacial Tension: Currently not available
	9.10 Vapor (Gas) Specific Gravity: 1.2
	9.11 Ratio of Specific Heats of Vapor (Gas): 1.322
	9.12 Latent Heat of Vaporization: 234 Btu/lb = 130 cal/g = 5.44 X 10 <sup>5</sup> J/kg
	9.13 Heat of Combustion: -6552 Btu/lb = -3640 cal/g = -152.4 X 10 <sup>5</sup> J/kg
	9.14 Heat of Decomposition: Not pertinent
	9.15 Heat of Solution: Not pertinent
	9.16 Heat of Polymerization: Not pertinent
	9.17 Heat of Fusion: 16.8 cal/g
	9.18 Limiting Value: Currently not available
	9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
N O T  P E R T I N E N T		-96 -94 -92 -90 -88 -86 -84 -82 -80 -78	0.430 0.430 0.430 0.430 0.430 0.430 0.430 0.430 0.430 0.430		N O T  P E R T I N E N T	-111	0.510

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
N O T  P E R T I N E N T		-80 -75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45	13.260 15.210 17.400 19.820 22.520 25.500 28.780 32.390 36.360 40.700 45.440 50.600 56.210 62.290 68.879 76.000 83.669 91.919 100.799 110.299 120.500 131.299 143.000 155.299 168.500 182.400	-80 -75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45	0.11090 0.12560 0.14170 0.15950 0.17890 0.20000 0.22300 0.24800 0.27510 0.30430 0.33570 0.36960 0.40590 0.44480 0.48630 0.53060 0.57780 0.62800 0.68130 0.73770 0.79730 0.86040 0.92680 0.99680 1.07000 1.14800	0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600	0.236 0.237 0.239 0.240 0.241 0.242 0.244 0.245 0.246 0.248 0.249 0.251 0.252 0.254 0.255 0.257 0.258 0.260 0.262 0.264 0.265 0.267 0.269 0.271 0.273