

Common Name: **HYDROGEN SULFIDE**

Synonyms: Dihydrogen Sulfide; Sulfurated Hydrogen; Sewer Gas
 CAS No: 7783-06-4
 Molecular Formula: H₂S
 RTK Substance No: 1017

Description: Colorless gas with the odor of rotten eggs

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
4 - Health 4 - Fire 0 - Reactivity DOT#: UN 1053 ERG Guide #: 117 Hazard Class: 2.3 (Poisonous)	FLAMMABLE GAS Stop flow of gas and use water spray, dry chemical or CO ₂ to extinguish fire. Use water spray to disperse vapors. POISONOUS GASES ARE PRODUCED IN FIRE , including <i>Sulfur Oxides</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool. Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source. Flow or agitation of Hydrogen Sulfide in <i>liquid</i> form may generate electrostatic charges. Hydrogen Sulfide may form an ignitable vapor/air mixture in closed tanks or containers.	Hydrogen Sulfide reacts violently and/or explosively with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); METALS; METAL POWDERS; METAL OXIDES; and STRONG NITRIC ACID . Hydrogen Sulfide is not compatible with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE). Hydrogen Sulfide may react with rusty iron pipes and some plastics.

SPILL/LEAKS

Isolation Distance:
 Small Spill: 30 meters (100 feet)
 Large Spill: 300 meters (1,000 feet)
 Fire: 800 meters (1/2 mile)

Stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to empty.

Use only non-sparking tools and equipment, especially when opening and closing containers of **Hydrogen Sulfide**.

Turn leaking cylinder with leak up to prevent escape of gas in liquid state.

Keep **Hydrogen Sulfide** out of confined spaces, such as sewers, because of the possibility of an explosion.

DO NOT wash into sewer.

For water spills, neutralize with agricultural lime, crushed limestone or sodium bicarbonate.

Hydrogen Sulfide is very toxic to aquatic organisms.

PHYSICAL PROPERTIES

Odor Threshold: 0.008 to 0.1 ppm (>100 ppm causes olfactory fatigue)

Flash Point: Flammable

LEL: 4%

UEL: 45%

Auto Ignition Temp: 500°F (260°C)

Vapor Density: 1.18 (air = 1)

Vapor Pressure: 14,000 mm Hg at 68°F (20°C)

Specific Gravity: 0.99 (water = 1)

Water Solubility: Soluble

Boiling Point: -76°F (-60°C)

Freezing Point: -122°F (-86°C)

Ionization Potential: 10.46 eV

Molecular Weight: 34.08

EXPOSURE LIMITS

NIOSH: 10 ppm, 10-min Ceiling
ACGIH: 1 ppm, 8-hr TWA; 5 ppm, STEL
IDLH: 100 ppm

The Protective Action Criteria values are:
 PAC-1 = 0.51 ppm PAC-2 = 27 ppm PAC-3 = 50

PROTECTIVE EQUIPMENT

Gloves: *Insulated* Neoprene, Viton and Barrier® (>8-hr breakthrough for *Inorganic gases and vapors*)

Coveralls: Tychem® BR, Responder® and TK (>8-hr breakthrough)

Respirator: >1 ppm - full facepiece PAPR with cartridges specific for **Hydrogen Sulfide**
 >10 ppm - SCBA

HEALTH EFFECTS

Eyes: Irritation
Skin: Contact with liquid causes frostbite
Inhalation: Nose, throat and lung irritation, with coughing, and severe shortness of breath (pulmonary edema)
 Nausea, dizziness, headache, unconsciousness and even death

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn. Seek medical attention.
Immerse affected part in warm water. Seek medical attention.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility. Medical observation is recommended as symptoms may be delayed.