



MATHESON

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Safety Data Sheet

Material Name: Hydrogen Sulfide, Hydrosulfuric Acid

SDS ID: 00244247

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

Hydrogen Sulfide, Hydrosulfuric Acid

Synonyms

Hydrogen sulfide (H₂S); Dihydrogen monosulfide; Dihydrogen sulfide; Sulfur dihydride; Sulfureted hydrogen; Sulfur hydride; Sewer gas

Product Use

Industrial and Specialty Gas Applications.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Gases - Category 1

Gases Under Pressure - Liquefied gas

Acute Toxicity - Inhalation - Dust/Mist - Category 2

Acute Toxicity - Inhalation - Vapor - Category 1

Serious Eye Damage/Eye Irritation - Category 2A

Specific target organ toxicity - Single exposure - Category 1

Specific target organ toxicity - Repeated exposure - Category 1

Hazardous to the Aquatic Environment - Acute - Category 1

Hazardous to the Aquatic Environment - Chronic - Category 1

GHS Label Elements

Symbol(s)





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Signal Word

Danger

Hazard Statement(s)

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Fatal if inhaled.

Causes serious eye irritation.

Causes damage to organs. (Cardiovascular system, central nervous system, respiratory system)

Causes damage to organs through prolonged or repeated exposure. (nervous system, respiratory system)

Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

Prevention

Keep away from heat, sparks, open flame, and hot surfaces - No smoking.

Do not breathe gas.

Use only outdoors or in a well-ventilated area.

Wear respiratory protection.

Do not eat, drink or smoke when using this product.

Wear eye/face protection.

Wash thoroughly after handling.

Avoid release to the environment.

Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

IF exposed.

Call a POISON CENTER or doctor/physician.

IF INHALED.

Remove person to fresh air and keep comfortable for breathing.

Immediately call a POISON CENTER or doctor/physician.

Specific treatment is urgent, see first aid section of Safety Data Sheet.

IF IN EYES.

Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do.

Continue rinsing.

If eye irritation persists.

Get medical advice/attention.

Collect spillage.

Storage

Store in a well-ventilated place.

Keep container tightly closed.

Protect from sunlight.

Store locked up.



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Dispose in accordance with all applicable regulations.

Statement of Unknown Toxicity

100% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

May cause frostbite upon sudden release of liquefied gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7783-06-4	Hydrogen sulfide	100

Section 4 - FIRST AID MEASURES

Inhalation

Do not attempt rescue in confined spaces without adequate protective gear and proper training. If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects**Acute**

frostbite, mild skin irritation, eye irritation, cardiovascular system damage, central nervous system damage, respiratory system damage

Delayed

nervous system damage, respiratory system damage

Note to Physicians

For inhalation, consider oxygen.



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Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media**Suitable Extinguishing Media**

regular dry chemical, carbon dioxide, water spray, foam, Let burn unless leak can be stopped immediately. Large fires: Use water spray, fog or regular foam.

Unsuitable Extinguishing Media

None known.

Special Hazards Arising from the Chemical

Extremely flammable. Containers may rupture or explode if exposed to heat. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

Hazardous Combustion Products

oxides of sulfur

Fire Fighting Measures

Move container from fire area if it can be done without risk. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Cool containers with water spray until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Keep unnecessary people away, isolate hazard area and deny entry. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Stop flow of gas.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Keep unnecessary people away, isolate hazard area and deny entry. Do not touch or walk through spilled material. Eliminate all ignition sources if safe to do so. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. All equipment used when handling the product must be grounded. Use only non-sparking tools. Stop leak if possible without personal risk. Use water spray to reduce vapors or divert vapor cloud drift. If possible, turn leaking containers so that gas escapes rather than liquid. Ventilate closed spaces before entering. Isolate area until gas has dispersed. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or



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equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Environmental Precautions

Avoid release to the environment. Collect spillage.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Do not eat, drink or smoke when using this product. Wear eye/face protection. Wash hands thoroughly after handling. Avoid release to the environment.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.

Keep container tightly closed.

Protect from sunlight.

Store locked up.

Store and handle in accordance with all current regulations and standards. Store in a tightly closed container. Compressed gases can present significant safety hazards. Store in a cool, dry place. Store in a well-ventilated area. Protect from physical damage. Avoid heat, flames, sparks and other sources of ignition. Cylinders should be stored upright (with valve protection cap in place). Avoid direct sunlight. Keep locked up. Store cylinders away from heavily trafficked areas and emergency exits. For additional and specific safe practices consult the following Compressed Gas Association (CGA) publications: P-1 "Safe Handling of Compressed Gases in Cylinders", AV-1 "Safe Handling and Storage of Compressed Gases", and "Compressed Gas Handbook". Grounding and bonding required. Use non-sparking tools and equipment. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). See original container for storage recommendations. Keep separated from incompatible substances.

Incompatible Materials

combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Hydrogen sulfide	7783-06-4
ACGIH:	1 ppm TWA
	5 ppm STEL



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NIOSH:	10 ppm Ceiling 10 min; 15 mg/m ³ Ceiling 10 min
	100 ppm IDLH
Europe:	5 ppm TWA; 7 mg/m ³ TWA
	10 ppm STEL; 14 mg/m ³ STEL
OSHA (US):	20 ppm Ceiling
Mexico:	10 ppm TWA LMPE-PPT; 14 mg/m ³ TWA LMPE-PPT
	15 ppm STEL [LMPE-CT]; 21 mg/m ³ STEL [LMPE-CT]

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures

There are no biological limit values for any of this product's components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. All energized electrical equipment must be designed in accordance with the electrical classification of the area (e.g., Class I, Division I). Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear splash resistant safety goggles with a faceshield. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. 100 ppm. Any powered, air-purifying respirator with cartridge(s) providing protection against this substance. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern. Any supplied-air respirator. Any self-contained breathing apparatus with a full facepiece. Emergency or planned entry into unknown concentrations or IDLH conditions -. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Escape -. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern. Any appropriate escape-type, self-contained breathing apparatus.



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For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	liquid
Odor	rotten eggs,paralyzes sense of smell above 100ppm	Color	colorless
Odor Threshold	0.14 ppm (Recognition Arsine)	pH	4.1 at 0.1 N (Aqueous solution)
Melting Point	-85.6 °C (-122 °F)	Boiling Point	-60.2 °C (-76 °F)
Freezing point	Not available	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Flammable gas
Autoignition	260 °C (500 °F)	Flash Point	(Flammable gas)
Lower Explosive Limit	4.0 to 4.3 % (by volume)	Decomposition	Not available
Upper Explosive Limit	44 to 46 % (by volume)	Vapor Pressure	18100 hPa at 20 °C
Vapor Density (air=1)	1.19	Specific Gravity (water=1)	Not available
Water Solubility	4 g/L (@ 20 °C)	Partition coefficient: n-octanol/water	Not available
Viscosity	0.0128 cp	Solubility (Other)	Not available
Density	1.5355 g/L at 0 °C	Log KOW	0.45 at 25 °C
Physical Form	compressed, liquefied gas	Molecular Formula	H ₂ -S
Molecular Weight	34.08		

Section 10 - STABILITY AND REACTIVITY

Reactivity



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No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Avoid inhalation of material or combustion by-products.

Incompatible Materials

combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases

Hazardous decomposition products

oxides of sulfur

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure**Inhalation**

irritation, cough, lack of sense of smell, sensitivity to light, changes in blood pressure, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, Disorientation, hallucinations, pain in extremities, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart disorders, nerve damage, brain damage, convulsions, coma, death

Skin Contact

irritation, skin disorders

Eye Contact

irritation, sensitivity to light, tearing, visual disturbances, eye damage

Ingestion

ingestion of a gas is unlikely

Acute and Chronic Toxicity**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Hydrogen sulfide (7783-06-4)

Inhalation LC50 Rat 0.99 mg/L 1 h

Immediate Effects

frostbite, mild skin irritation, eye irritation, cardiovascular system damage, central nervous system damage, respiratory system damage

Delayed Effects



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nervous system damage, respiratory system damage

Irritation/Corrosivity Data

mild skin irritation, eye irritation

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Germ Cell Mutagenicity

No data available.

Tumorigenic Data

No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

Cardiovascular system, central nervous system, Respiratory system

Specific Target Organ Toxicity - Repeated Exposure

nervous system, Respiratory system

Aspiration hazard

No data available.

Medical Conditions Aggravated by Exposure

eye disorders, respiratory disorders, nervous system disorders

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Component Analysis - Aquatic Toxicity

Hydrogen sulfide	7783-06-4
Fish:	LC50 96 h <i>Lepomis macrochirus</i> 0.0448 mg/L [flow-through]; LC50 96 h <i>Pimephales promelas</i> 0.016 mg/L [flow-through]

Persistence and Degradability

No information available for the product.



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This material is believed not to bioaccumulate.

Mobility

No information available for the product.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Component Waste Numbers

Hydrogen sulfide	7783-06-4
RCRA:	waste number U135

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: Hydrogen sulfide

Hazard Class: 2.3

UN/NA #: UN1053

Required Label(s): 2.3 2.1

IMDG Information:

Shipping Name: Hydrogen sulphide

Hazard Class: 2.3

UN#: UN1053

Required Label(s): 2.3 2.1

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Hydrogen sulfide	7783-06-4
SARA 302:	500 lb TPQ
SARA 313:	1 % de minimis concentration



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CERCLA:	100 lb final RQ; 45.4 kg final RQ
OSHA (safety):	1500 lb TQ
SARA 304:	100 lb EPCRA RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes Chronic Health: Yes Fire: Yes Pressure: Yes Reactivity: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Hydrogen sulfide	7783-06-4	Yes	Yes	Yes	Yes	Yes

Not listed under California Proposition 65**Canadian WHMIS Ingredient Disclosure List (IDL)**

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Hydrogen sulfide	7783-06-4
	1 %

Component Analysis - Inventory

Hydrogen sulfide (7783-06-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 4 Fire: 4 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key/Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport;
AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical

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Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information

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