

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: HYDROGEN SULFIDE

TRADE NAMES/SYNONYMS:

MTG MSDS 54; HYDROGEN SULFIDE (H₂S); DIHYDROGEN MONOSULFIDE; DIHYDROGEN SULFIDE; HYDROSULFURIC ACID; SULFUR DIHYDRIDE; SULFURETED HYDROGEN; SULFUR HYDRIDE; STINK DAMP; SEWER GAS; RCRA U135; UN 1053; H₂S; MAT11210; RTECS MX1225000

CHEMICAL FAMILY: inorganic, gas

CREATION DATE: Jan 24 1989

REVISION DATE: Jun 14 2007

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HYDROGEN SULFIDE
CAS NUMBER: 7783-06-4
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=4 FIRE=4 REACTIVITY=0



EMERGENCY OVERVIEW:

COLOR: colorless

PHYSICAL FORM: gas

ODOR: rotten egg odor

MAJOR HEALTH HAZARDS: harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage

PHYSICAL HAZARDS: Flammable gas. May cause flash fire. Flash back hazard. Electrostatic charges may be generated by flow, agitation, etc.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: 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

LONG TERM EXPOSURE: loss of appetite, weight loss, irregular heartbeat, headache, sleep disturbances, lung congestion, nerve damage, paralysis, effects on the brain

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation

LONG TERM EXPOSURE: skin disorders

EYE CONTACT:

SHORT TERM EXPOSURE: irritation, sensitivity to light, tearing, blurred vision, visual disturbances

LONG TERM EXPOSURE: irritation, sensitivity to light, tearing, blurred vision, eye damage

INGESTION:

SHORT TERM EXPOSURE: ingestion of a gas is unlikely

LONG TERM EXPOSURE: ingestion of a gas is unlikely

4. FIRST AID MEASURES

INHALATION: 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 CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If a large amount is swallowed, get medical attention.

ANTIDOTE: amyl nitrite, inhalation; sodium nitrite, intravenous; pyridoxine, intravenous; urea, intravenous.
CAUTION! Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Pressurized containers may rupture or explode if exposed to sufficient heat. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

EXTINGUISHING MEDIA: Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: 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. Keep unnecessary people away, isolate hazard area and deny entry. For tank, rail car or tank truck, evacuation radius: 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.

LOWER FLAMMABLE LIMIT: 4.0-4.3%

UPPER FLAMMABLE LIMIT: 44-46%

AUTOIGNITION: 500 F (260 C)

6. ACCIDENTAL RELEASE MEASURES

AIR RELEASE:

Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

SOIL RELEASE:

Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

WATER RELEASE:

Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

OCCUPATIONAL RELEASE:

Do not touch spilled material. Stop leak if possible without personal risk. Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or 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).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Store in a cool, dry place. Store in a well-ventilated area. Avoid contact with light. Grounding and bonding required. 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). Keep separated from incompatible substances.

HANDLING: Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

HYDROGEN SULFIDE:

20 ppm OSHA ceiling

50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs)

10 ppm (14 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)

15 ppm (21 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

10 ppm ACGIH TWA

15 ppm ACGIH STEL

10 ppm (15 mg/m³) NIOSH recommended ceiling 10 minute(s)

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: butyl rubber, polyvinyl chloride (PVC), neoprene

RESPIRATOR: 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: colorless

ODOR: rotten egg odor

TASTE: sweet taste

MOLECULAR WEIGHT: 34.08

MOLECULAR FORMULA: H₂S

BOILING POINT: -78 to -77 F (-61 to -60.3 C)

FREEZING POINT: -123 F (-86 C)

TRIPLE POINT: -122 F (-85.6 C)

VAPOR PRESSURE: 15200 mmHg @ 25 C

VAPOR DENSITY (air=1): 1.2

SPECIFIC GRAVITY (water=1): 1.192

DENSITY: 1.539 g/L @ 0 C

WATER SOLUBILITY: 2.58-2.9% @ 20 C

PH: 4.5-<7 (saturated solution)

VOLATILITY: Not applicable

ODOR THRESHOLD: 0.13 ppm

EVAPORATION RATE: Not applicable

VISCOSITY: 0.0128 cP @ 25 C

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

SOLVENT SOLUBILITY:

Soluble: carbon disulfide, alcohol, ether, glycerol, gasolines, kerosene, crude oil, alkali solutions

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

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

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: oxides of sulfur

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

HYDROGEN SULFIDE:

IRRITATION DATA: 0.000125 ppm/5 hour(s) eyes-human

TOXICITY DATA: 444 ppm inhalation-rat LC50

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Toxic: inhalation

TARGET ORGANS: blood

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: eye disorders, respiratory disorders, nervous system disorders

REPRODUCTIVE EFFECTS DATA: Available.

ADDITIONAL DATA: Alcohol may enhance the toxic effects.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 14.9 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (*Pimephales promelas*)

INVERTEBRATE TOXICITY: 9730 ug/L 1.5 hour(s) (Mortality) Mediterranean mussel (*Mytilus galloprovincialis*)

ENVIRONMENTAL SUMMARY: Highly toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U135.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Hydrogen sulfide

ID NUMBER: UN1053

HAZARD CLASS OR DIVISION: 2.3

LABELING REQUIREMENTS: 2.3; 2.1

QUANTITY LIMITATIONS:

PASSENGER AIRCRAFT OR RAILCAR: Forbidden

CARGO AIRCRAFT ONLY: Forbidden

ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B



CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Hydrogen sulphide

UN NUMBER: UN1053

CLASS: 2.3; 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

HYDROGEN SULFIDE: 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):

HYDROGEN SULFIDE: 500 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):

HYDROGEN SULFIDE: 100 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: Yes

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):

HYDROGEN SULFIDE: Administrative stay issued Aug. 22, 1994

OSHA PROCESS SAFETY (29CFR1910.119):

HYDROGEN SULFIDE: 1500 LBS TQ

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: A, B1, D1A, D2B.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDL): Listed on inventory.



16. OTHER INFORMATION

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