

Section 1: Product and Company Identification

Middlesex Gases & Technologies

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Product Code: Hydrogen Sulfide

Section 2: Hazards Identification



Danger

Hazard Classification:

Acute Gas Inhale Toxicity (Category 2)
Gases Under Pressure

Hazard Statements:

Contains gas under pressure; may explode if heated
Fatal if inhaled
Toxic to aquatic life

Precautionary Statements

Prevention:

Do not breathe dust/fume/gas/mist/ vapors/spray..
Use only outdoors or in a well-ventilated area.
[In case of inadequate ventilation] wear respiratory protection.

Response:

Specific treatment is urgent.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Immediately call a poison center or doctor.
If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
Protect from sunlight.
Store locked up.

Disposal:

Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

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|--------------|
| CAS # |
|--------------|

| |
|-----------|
| 7783-06-4 |
|-----------|

| Chemical Substance | Chemical Family | Trade Names |
|--------------------|-----------------|---|
| HYDROGEN SULFIDE | inorganic, gas | HYDROGEN SULFIDE (H ₂ S); DIHYDROGEN MONOSULFIDE; DIHYDROGEN SULFIDE; HYDROSULFURIC ACID; SULFUR DIHYDRIDE; SULFURETED HYDROGEN; SULFUR HYDRIDE; STINK DAMP; SEWER GAS; RCRA U135; UN 1053; H ₂ S |

Section 4: First Aid Measures

| Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
|--|--|--|--|----------------------------------|
| 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. | Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |

Section 5: Fire Fighting Measures

| Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
|--|------------------------|--|
| Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray. | Sulfur oxides | <ul style="list-style-type: none"> ▪ Any self-contained breathing apparatus with a full facepiece. ▪ Protective material types: butyl rubber, polyvinyl chloride (PVC), neoprene |

Section 6: Accidental Release Measures

| Personal Precautions | Environmental Precautions | Methods for Containment |
|--|---|---|
| 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). Do not touch spilled material. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material. |

| Methods for Cleanup | Other Information |
|---|---|
| Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). | 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). |

Section 7: Handling and Storage

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

Section 8: Exposure Controls/Personal Protection

| Exposure Guidelines |
|--|
| HYDROGEN SULFIDE: 20 ppm OSHA ceiling 50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs) 10 ppm (14 mg/m ³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 15 ppm (21 mg/m ³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 10 ppm ACGIH TWA 15 ppm ACGIH STEL 10 ppm (15 mg/m ³) NIOSH recommended ceiling 10 minute(s) TLV-TWA: 1ppm Upper respiratory irritation (ACGIH) |

Engineering Controls

Handle only in fully enclosed systems.

| Eye Protection | Skin Protection | Respiratory Protection |
|---|---|---|
| Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | Wear appropriate chemical resistant clothing. | Any self-contained breathing apparatus with a full facepiece. |

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

| Physical State | Appearance | Color | Change in Appearance | Physical Form | Odor | Taste |
|----------------|------------|-----------|----------------------|---------------|-----------------|-------|
| Gas | Colorless | Colorless | N/A | Gas | Rotten egg odor | N/A |

| Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|-------------|---------------|-----------------------|--------------------------|------------------------|------------------------|
| Flammable | Not available | Not available | 500 F (260 C) | 44-46% | 4.0-4.3% |

| Boiling Point | Freezing Point | Vapor Pressure | Vapor Density | Specific Gravity | Water Solubility | pH | Odor Threshold | Evaporation Rate | Viscosity |
|-------------------------------|----------------|-------------------|---------------|------------------|------------------|-----------------------------|----------------|------------------|------------------|
| -78 to -77 F (-61 to -60.3 C) | -123 F (-86 C) | 15200 mmHg @ 25 C | 1.2 (Air=1) | 1.192 | 2.58-2.9% @ 20 C | 4.5-<7 (saturated solution) | 0.13 ppm | Not applicable | 0.0128 cP @ 25 C |

| Molecular Weight | Molecular Formula | Density | Weight per Gallon | Volatility by Volume | Volatility | Solvent Solubility |
|------------------|-------------------|-----------------|-------------------|----------------------|----------------|---|
| 34.08 | H ₂ S | 1.539 g/L @ 0 C | Not available | Not available | Not applicable | Soluble: Carbon disulfide, alcohol, ether, glycerol, gasolines, kerosene, crude oil, alkali solutions |

Section 10: Stability and Reactivity

| Stability | Conditions to Avoid | Incompatible Materials |
|---|---|---|
| Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases, rust, oxidants, oxygen, copper powder, acetaldehyde, silver fulminate |

| Hazardous Decomposition Products | Possibility of Hazardous Reactions |
|----------------------------------|------------------------------------|
| Oxides of sulfur | Will not polymerize. |

Section 11: Toxicology Information

Acute Effects

| Oral LD50 | Dermal LD50 | Inhalation |
|-----------------------------|--|---|
| 444 ppm inhalation-rat LC50 | Irritation 0.000125 ppm/5 hour(s) eyes-human | Irritation, lack of sense of smell, sensitivity to light, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart damage, nerve damage, brain damage, coma, death |

| Eye Irritation | Skin Irritation | Sensitization |
|---|------------------------------|---|
| Irritation, sensitivity to light, visual disturbances | Irritation liquid: frostbite | Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage |

Chronic Effects

| Carcinogenicity | Mutagenicity | Reproductive Effects | Developmental Effects |
|-----------------|---------------|----------------------|-----------------------|
| Not available | Not available | Available. | No data |

Section 12: Ecological Information

Fate and Transport

| Eco toxicity | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
|--|-------------------------------|--------------------------------|-------------------------|
| Fish toxicity: Acute LC50 7 ug/L Fresh water Fish - Fathead minnow - Pimephales promelas - FRY 96 hours; 14.9 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimeph) Invertebrate toxicity: 9730 ug/L 1.5 hour(s) (Mortality) Mediterranean mussel (Mytilus galloprovincialis) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available | Highly toxic to aquatic life. | Not available | Not available |

Section 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.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

| Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|----------------------|-----------|--------------------------|----------------|-----------------------|--|--|---------------------------------|
| Hydrogen sulfide | UN1053 | 2.3 | Not applicable | 2.3; 2.1 | Forbidden | Forbidden | Toxic-Inhalation Hazard Zone B |

Canadian Transportation of Dangerous Goods

| Shipping Name | UN Number | Class | Packing Group / Risk Group |
|--|-----------|----------|----------------------------|
| HYDROGEN SULFIDE; or HYDROGEN SULPHIDE | UN1053 | 2.3; 2.1 | Not applicable |

Section 15: Regulatory Information

U.S. Regulations

| CERCLA Sections | SARA 355.30 | SARA 355.40 |
|-----------------|-------------|-------------|
| 100 LBS RQ | 500 LBS TPQ | 100 LBS RQ |

SARA 370.21

| Acute | Chronic | Fire | Reactive | Sudden Release |
|-------|---------|------|----------|----------------|
| Yes | No | Yes | No | Yes |

SARA 372.65

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| HYDROGEN SULFIDE: Administrative stay issued Aug. 22, 1994 |
|--|

OSHA Process Safety

| |
|-------------|
| 1500 LBS TQ |
|-------------|

State Regulations

| CA Proposition 65 |
|-------------------|
| Not regulated. |

Canadian Regulations

| WHMIS Classification |
|----------------------|
| A, B1, D1A, D2B. |

National Inventory Status

| US Inventory (TSCA) | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
|----------------------|------------------------------|-----------------------------|
| Listed on inventory. | Not listed. | Listed on inventory. |

Section 16: Other Information

| NFPA Rating |
|------------------------------|
| HEALTH=4 FIRE=4 REACTIVITY=0 |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard