

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 SELENIDE

TRADE NAMES/SYNONYMS:

MTG MSDS 53; SELENIUM HYDRIDE; HYDROGEN SELENIDE, ANHYDROUS; HYDOSELENIC ACID, ANHYDROUS; DIHYDROGEN SELENIDE; SELENIUM DIHYDRIDE; SELANE; ELECTRONIC E-2; UN 2202; MAT11200; RTECS MX1050000

CHEMICAL FAMILY: acids, inorganic

CREATION DATE: Jan 24 1989

REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HYDROGEN SELENIDE
CAS NUMBER: 7783-07-5
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=4 FIRE=4 REACTIVITY=3



EMERGENCY OVERVIEW:

COLOR: colorless

PHYSICAL FORM: gas

ODOR: unpleasant odor

MAJOR HEALTH HAZARDS: potentially fatal if inhaled, respiratory tract irritation, skin irritation, eye irritation

PHYSICAL HAZARDS: May explode on contact with water. Flammable gas. May cause flash fire.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation (possibly severe), lack of sense of smell, garlic odor, metallic taste, nausea, vomiting, diarrhea, cough, wheezing, difficulty breathing, headache, dizziness, fatigue, lassitude, emotional disturbances, lung congestion, tremors, bluish skin color, pulmonary edema (effects may be delayed), effects on spleen, lung damage, liver damage, death

LONG TERM EXPOSURE: same as effects reported in short term exposure, tooth decay, menstrual disorders

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe), rash

LONG TERM EXPOSURE: same as effects reported in short term exposure, allergic reactions

EYE CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe), conjunctivitis, eye damage

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: no information on significant adverse effects

LONG TERM EXPOSURE: no information is available

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: 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.

EYE CONTACT: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

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

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Consider olive oil, epinephrine sulfate, local anesthetics, hot and cold compresses.

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. Vapor/air mixtures are explosive above flash point. Containers may rupture or explode if exposed to heat.

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. Cool containers with water

spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile).

FLASH POINT: flammable

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. 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. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances. 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 Part B).

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

HYDROGEN SELENIDE:

HYDROGEN SELENIDE (as Se):

0.05 ppm (0.2 mg/m³) OSHA TWA

0.05 ppm ACGIH TWA

0.05 ppm (0.2 mg/m³) NIOSH recommended TWA 10 hour(s)

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. 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: For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate

protective, cold insulating clothing.

GLOVES: Wear insulated gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

0.5 ppm

Any supplied-air respirator.

1 ppm

Any supplied-air respirator operated in a continuous-flow mode.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator 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.

Only non-oxidizable sorbents are allowed (not charcoal).

Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: colorless

ODOR: unpleasant odor

MOLECULAR WEIGHT: 80.98

MOLECULAR FORMULA: H₂-SE

BOILING POINT: -44 F (-42 C)

FREEZING POINT: -83 F (-64 C)

VAPOR PRESSURE: 7220 mmHg @ 21.1 C

VAPOR DENSITY (air=1): 2.8

SPECIFIC GRAVITY (water=1): 2.12 @ -42 C

WATER SOLUBILITY: 377% @ 4 C

PH: acidic

VOLATILITY: Not applicable

ODOR THRESHOLD: 0.3 ppm

EVAPORATION RATE: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

SOLVENT SOLUBILITY:

Soluble: carbonyl chloride, carbon disulfide, phosgene

10. STABILITY AND REACTIVITY

REACTIVITY: May ignite on exposure to air. May explode on contact with water.

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: acids, halo carbons, peroxides, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of selenium

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

HYDROGEN SELENIDE:

TOXICITY DATA: 300 ppb/8 hour(s) inhalation-guinea pig LC50

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Highly Toxic: inhalation

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: liver disorders, respiratory disorders

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D003.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Hydrogen selenide, anhydrous

ID NUMBER: UN2202

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 A

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Hydrogen selenide, anhydrous

UN NUMBER: UN2202

CLASS: 2.3; 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B):

HYDROGEN SELENIDE (as Se): 10 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):

HYDROGEN SELENIDE (as Se): 10 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: Yes

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):

HYDROGEN SELENIDE (as Se)

OSHA PROCESS SAFETY (29 CFR 1910.119):

HYDROGEN SELENIDE (as Se): 150 LBS TQ

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: ABD1

NATIONAL INVENTORY STATUS:

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

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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