

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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**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: THIOPHENE**

**TRADE NAMES/SYNONYMS:**

MTG MSDS 195; THIOFURAN; THIOFURFURAN; DIVINYLENE SULFIDE; THIAPHENE;  
BUTYLENE SULFIDE; THIACYCLOPENTADIENE; THIOFURAM; THIoTETROLE;  
THIOPHURANE; THIOPHEN; THIOLE; UN 2414; MAT23380; RTECS XM7350000

**CHEMICAL FAMILY:** heterocyclic, sulfur

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Dec 11 2008

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## 2. COMPOSITION, INFORMATION ON INGREDIENTS

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**COMPONENT:** THIOPHENE  
**CAS NUMBER:** 110-02-1  
**PERCENTAGE:** 100

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## 3. HAZARDS IDENTIFICATION

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**NFPA RATINGS (SCALE 0-4):** HEALTH=2 FIRE=3 REACTIVITY=0



**EMERGENCY OVERVIEW:**

**COLOR:** colorless

**PHYSICAL FORM:** liquid

**ODOR:** faint odor, sweet odor

**MAJOR HEALTH HAZARDS:** harmful if inhaled, central nervous system depression

**PHYSICAL HAZARDS:** Flammable liquid and vapor. Vapor may cause flash fire.

**POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**SHORT TERM EXPOSURE:** irritation, sore throat, cough, headache, dizziness, drowsiness, loss of

coordination, weakness, tremors, unconsciousness

**LONG TERM EXPOSURE:** cardiovascular system effects, liver effects, nerve damage

**SKIN CONTACT:**

**SHORT TERM EXPOSURE:** irritation

**LONG TERM EXPOSURE:** no information is available

**EYE CONTACT:**

**SHORT TERM EXPOSURE:** irritation, sensitivity to light

**LONG TERM EXPOSURE:** no information is available

**INGESTION:**

**SHORT TERM EXPOSURE:** no information on significant adverse effects

**LONG TERM EXPOSURE:** liver effects, kidney effects, heart disorders

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## 4. FIRST AID MEASURES

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**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.

**NOTE TO PHYSICIAN:** For inhalation, consider oxygen.

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## 5. FIRE FIGHTING MEASURES

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**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.

**EXTINGUISHING MEDIA:** regular dry chemical, carbon dioxide, water, regular foam

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. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. 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). 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 spray until well after the fire is out. 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.

**FLASH POINT:** 30 F (-1 C) (CC)  
**LOWER FLAMMABLE LIMIT:** 1.5%  
**UPPER FLAMMABLE LIMIT:** 12.5%  
**AUTOIGNITION:** 743 F (395 C)  
**FLAMMABILITY CLASS (OSHA):** IB

**HAZARDOUS COMBUSTION PRODUCTS:**

Thermal decomposition or combustion products: oxides of carbon, oxides of sulfur

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## 6. ACCIDENTAL RELEASE MEASURES

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**OCCUPATIONAL RELEASE:**

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

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## 7. HANDLING AND STORAGE

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**STORAGE:** Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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**EXPOSURE LIMITS:**

**THIOPHENE:**

No occupational exposure limits established.

**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. 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.

**RESPIRATOR:** Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

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.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** liquid

**COLOR:** colorless

**ODOR:** faint odor, sweet odor

**MOLECULAR WEIGHT:** 84.14

**MOLECULAR FORMULA:** C<sub>4</sub>H<sub>4</sub>S

**BOILING POINT:** 183 F (84 C) @ 760 mmHg

**FREEZING POINT:** -38.9 F (-39.4 C)

**VAPOR PRESSURE:** 40 mmHg @ 12.5 C

**VAPOR DENSITY (air=1):** 2.9

**SPECIFIC GRAVITY (water=1):** 1.06494 @ 4 C

**WATER SOLUBILITY:** 3.020 g/L @ 25 C (insoluble)

**PH:** Not available

**VOLATILITY:** Not available

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** Not available

**VISCOSITY:** 0.621 mPa.s

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

**SOLVENT SOLUBILITY:**

**Soluble:** alcohol, ether, acetone, benzene, pyrimidines, ethanol, carbon tetrachloride, dioxane, toluene

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:** Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

**INCOMPATIBILITIES:** combustible materials, oxidizing materials, nitrates, nitric acid

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition or combustion products: oxides of carbon, oxides of sulfur

**POLYMERIZATION:** Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**THIOPHENE:**

**TOXICITY DATA:** 9500 mg/m<sup>3</sup>/2 hour(s) inhalation-mouse LC50; >20 ml/kg skin-guinea pig LD50; 1400 mg/kg oral-rat LD50

**ACUTE TOXICITY LEVEL:**

Toxic: inhalation

Moderately Toxic: ingestion

**TARGET ORGANS:** central nervous system

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## 12. ECOLOGICAL INFORMATION

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**ECOTOXICITY DATA:**

**FISH TOXICITY:** 27000 ug/L 1 day(s) LC100 (Mortality) Orangespotted sunfish (*Lepomis humilis*)

**INVERTEBRATE TOXICITY:** 318000 ug/L 48 week(s) LC50 (Mortality) Water flea (*Daphnia magna*)

**ALGAL TOXICITY:** 1000000 ug/L 4 week(s) (Photosynthesis) Green algae (*Selenastrum capricornutum*)

**FATE AND TRANSPORT:**

**KOW:** 14454.40 (log = 4.17) (estimated from water solubility)

**KOC:** 230 (log = 2.37) estimated

**HENRY'S LAW CONSTANT:** 2.9 E -3

**BIOCONCENTRATION:** 6.78 (estimated from water solubility)

**ENVIRONMENTAL SUMMARY:** Leaches through the soil or the sediment at a moderate rate. Accumulates very little in the bodies of living organisms. Highly volatile from water.

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## 13. DISPOSAL CONSIDERATIONS

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

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101:**  
**PROPER SHIPPING NAME:** Thiophene  
**ID NUMBER:** UN2414  
**HAZARD CLASS OR DIVISION:** 3  
**PACKING GROUP:** II  
**LABELING REQUIREMENTS:** 3



**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:**  
**SHIPPING NAME:** Thiophene  
**UN NUMBER:** UN2414  
**CLASS:** 3  
**PACKING GROUP/CATEGORY:** II

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## 15. REGULATORY INFORMATION

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**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):** Not regulated.

**SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):** Not regulated.

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

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: No

**SARA TITLE III SECTION 313 (40 CFR 372.65):** Not regulated.

**OSHA PROCESS SAFETY (29 CFR 1910.119):** Not regulated.

**STATE REGULATIONS:**

**California Proposition 65:** Not regulated.

**CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** B2.

**NATIONAL INVENTORY STATUS:**

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

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

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

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**16. OTHER INFORMATION**

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