1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.  
Emergency Contact:
150 Allen Road Suite 302  
CHEMTREC 1-800-424-9300  
Basking Ridge, New Jersey 07920  
Calls Originating Outside the US:
Information: 1-800-416-2505  
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: STYRENE MONOMER, INHIBITED

TRADE NAMES/SYNONYMS:  
MTG MSDS 243; PHENYLETHYLENE; VINYLBENZENE; CINNAMENE; PHENYLETHENE;  
ETHENYL BENZENE; BENZENE, ETHENYL-; STYRENE; STYROL; STYROLENE; STYRENE  
MONOMER; STCC 4907265; UN 2055; O-4507; MAT22100; RTECS WL3675000

CHEMICAL FAMILY: hydrocarbons, aromatic

CREATION DATE: Jan 24 1989  
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: STYRENE MONOMER, INHIBITED  
CAS NUMBER: 100-42-5  
PERCENTAGE: >99

COMPONENT: (1,1-DIMETHYLETHYL)-1,2-BENZENEDIOL  
CAS NUMBER: 27213-78-1  
PERCENTAGE: <0.1

3. HAZARDS IDENTIFICATION

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

EMERGENCY OVERVIEW:  
COLOR: colorless to yellow  
PHYSICAL FORM: liquid  
ODOR: sweet odor, distinct odor, pungent odor  
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous  
system depression, suspect cancer hazard (in animals)
PHYSICAL HAZARDS: Flammable liquid and vapor. Vapor may cause flash fire. May polymerize. Containers may rupture or explode.

POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: irritation, metallic taste, ringing in the ears, nausea, vomiting, headache, drowsiness, symptoms of drunkenness, hearing loss, liver damage, coma
LONG TERM EXPOSURE: menstrual disorders, lung congestion, kidney damage, liver damage, brain damage

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, symptoms of drunkenness
LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:
SHORT TERM EXPOSURE: irritation, tearing, eye damage
LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:
SHORT TERM EXPOSURE: same as effects reported in other routes of exposure, symptoms of drunkenness
LONG TERM EXPOSURE: irregular heartbeat, kidney damage, liver damage, cancer

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. 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.

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.

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. 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). 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. Water may be ineffective.

FLASH POINT: 88 F (31 C) (CC)  
LOWER FLAMMABLE LIMIT: 1.1%  
UPPER FLAMMABLE LIMIT: 6.1%  
AUTOIGNITION: 914 F (490 C)  
FLAMMABILITY CLASS (OSHA): IC

6. ACCIDENTAL RELEASE MEASURES

AIR RELEASE: 
Reduce vapors with water spray. Stay upwind and keep out of low areas.

SOIL RELEASE: 
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Dike for later disposal. Absorb with sand or other non-combustible material. Collect with absorbent into suitable container.

WATER RELEASE: 
Absorb with activated carbon. Collect spilled material using mechanical equipment. Cover with absorbent sheets, spill-control pads or pillows. Apply detergents, soaps, alcohols or another surface active agent. Remove trapped material with suction hoses.

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. 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 1910.106. Grounding and bonding required. Protect from physical damage.
8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
STYRENE MONOMER, INHIBITED:
STYRENE:
100 ppm OSHA TWA
200 ppm OSHA ceiling
600 ppm OSHA peak (5 minutes in any 3 hours)
50 ppm (213 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
100 ppm (426 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
20 ppm ACGIH TWA
40 ppm ACGIH STEL
50 ppm (215 mg/m3) NIOSH recommended TWA 10 hour(s)
100 ppm (425 mg/m3) NIOSH recommended STEL

VENTILATION: Provide local exhaust 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. 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: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
500 ppm
Any air-purifying half-mask respirator equipped with organic vapor cartridge(s).
Any supplied-air respirator.
700 ppm
Any supplied-air respirator operated in a continuous-flow mode.
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any powered, air-purifying respirator with organic vapor cartridge(s).
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 organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** liquid
**COLOR:** colorless to yellow
**TEXTURE:** oily
**ODOR:** sweet odor, distinct odor, pungent odor
**MOLECULAR WEIGHT:** 104.14
**MOLECULAR FORMULA:** C8-H8
**BOILING POINT:** 295 F (146 C)
**FREEZING POINT:** -24 F (-31 C)
**VAPOR PRESSURE:** 10 mmHg @ 31 C
**VAPOR DENSITY** *(air=1)*: 3.6
**SPECIFIC GRAVITY** *(water=1)*: 0.9060
**WATER SOLUBILITY:** 0.02%
**PH:** Not available
**VOLATILITY:** Not available
**ODOR THRESHOLD:** 0.1 ppm
**EVAPORATION RATE:** 0.5 (butyl acetate=1)
**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available
**SOLVENT SOLUBILITY:**
Soluble: alcohol, ether, acetone, benzene, petroleum ether, methanol, carbon disulfide

### 10. STABILITY AND REACTIVITY

**REACTIVITY:** May polymerize. Avoid contact with light or storage and use above room temperature. Closed containers may rupture violently.

**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:** acids, metal salts, combustible materials, oxidizing materials, metals, peroxides

**HAZARDOUS DECOMPOSITION:**
Thermal decomposition products: oxides of carbon

**POLYMERIZATION:** May polymerize. Avoid contact with heat, air, light, initiators or curing agents. Polymerizes with evolution of heat. Avoid contact with temperatures above 65 C.
11. TOXICOLOGICAL INFORMATION

**STYRENE MONOMER, INHIBITED:**

**IRRITATION DATA:** 500 mg rinsed skin-human; 500 mg open skin-rabbit mild; 100 percent skin-rabbit moderate; 100 mg eyes-rabbit severe; 100 mg/24 hour(s) eyes-rabbit moderate; 50 ppm eyes-human mild

**TOXICITY DATA:** 2770 ppm/4 hour(s) inhalation-rat LC50; >5010 mg/kg skin-rabbit LD50; 2650 mg/kg oral-rat LD50

**CARCINOGEN STATUS:** IARC: Human Inadequate Evidence, Animal Limited Evidence, Group 2B; ACGIH: A4 -Not Classifiable as a Human Carcinogen

**LOCAL EFFECTS:**
Irritant: inhalation, skin, eye

**ACUTE TOXICITY LEVEL:**
Moderately Toxic: inhalation, ingestion

**TARGET ORGANS:** central nervous system

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** central nervous system disorders, respiratory disorders, skin disorders and allergies

**TUMORIGENIC DATA:** Available.

**MUTAGENIC DATA:** Available.

**REPRODUCTIVE EFFECTS DATA:** Available.

**ADDITIONAL DATA:** May cross the placenta. Alcohol may enhance the toxic effects.

12. ECOLOGICAL INFORMATION

**ECOTOXICITY DATA:**

**FISH TOXICITY:** 4020 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)

**INVERTEBRATE TOXICITY:** 12100 ug/L 96 hour(s) LC50 (Mortality) Opossum shrimp (Mysidopsis bahia)

**ALGAL TOXICITY:** 78000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

13. DISPOSAL CONSIDERATIONS


14. TRANSPORT INFORMATION

**U.S. DOT 49 CFR 172.101:**

**PROPER SHIPPING NAME:** Styrene monomer, stabilized
ID NUMBER: UN2055
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: III
LABELING REQUIREMENTS: 3

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Styrene monomer, stabilized
UN NUMBER: UN2055
CLASS: 3
PACKING GROUP/CATEGORY: III

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
STYRENE: 1000 LBS RQ


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
STYRENE


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: BD2

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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