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: VINYL ACETYLENE

TRADE NAMES/SYNONYMS:
BUTENYNE; 1-BUTEN-3-YNE; 1-BUTENYNE; MONOVINYLCETYLENE; VINYLACETYLENE; 3-BUTEN-1-YNE; 00231821; RTECS EN0950000

CHEMICAL FAMILY: hydrocarbons, aliphatic

CREATION DATE: Apr 21 2006
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: VINYL ACETYLENE
CAS NUMBER: 689-97-4
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

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

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid, gas
ODOR: distinct odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, difficulty breathing

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, irregular heartbeat, headache, drowsiness, fatigue, dizziness, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma

LONG TERM EXPOSURE: no information is available

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation

EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation

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.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Flammable. The gas is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point. Gas/air mixtures are explosive. Containers may rupture or explode if exposed to heat.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical

Large fires: 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: Stop leak if possible without personal risk.
Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from
other flammables. 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. 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. Evacuate if fire gets out of control or
containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downwind
evacuation if material is leaking.

FLASH POINT: <23 F (<-5 C)
LOWER FLAMMABLE LIMIT: 2%
UPPER FLAMMABLE LIMIT: 100% (decomposes)

HAZARDOUS COMBUSTION PRODUCTS:
Thermal decomposition or combustion products: oxides of carbon

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. 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. Ventilate closed spaces before entering.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Store in a well-
ventilated area. Keep away from heat, sparks and flame. Protect from physical damage. Protect from sunlight.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
VINYL ACETYLENE:
No occupational exposure limits established.

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of
material are present. Provide local exhaust 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.

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 supplied-air respirator with a full facepiece that is operated in a 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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas
COLOR: colorless
PHYSICAL FORM: liquid, gas
ODOR: distinct odor
MOLECULAR WEIGHT: 52.05
MOLECULAR FORMULA: C4-H4
BOILING POINT: 41 F (5 C) @ 757 mmHg
FREEZING POINT: Not available
VAPOR PRESSURE: 1350 mmHg @ 25 C
VAPOR DENSITY (air=1): 1.8
SPECIFIC GRAVITY (water=1): 0.7905 @ 0 C
WATER SOLUBILITY: 1.79 g/L @ 30 C
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: 60 mg/m3
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable
SOLVENT SOLUBILITY: Soluble: benzene

10. STABILITY AND REACTIVITY

REACTIVITY: May explode when heated. May decompose explosively when heated. May polymerize violently or explosively. Avoid contact with heat, light, sunlight, oxygen, air, peroxides, high temperatures
and oxidizers. May form explosive peroxides.

**CONDITIONS TO AVOID:** Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.

**INCOMPATIBILITIES:** combustible materials, oxidizing materials, peroxides, 1,3-butadiene

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

**POLYMERIZATION:** May polymerize violently or explosively. Avoid contact with heat, light, sunlight, oxygen, air, peroxides, high temperatures and oxidizers.

### 11. TOXICOLOGICAL INFORMATION

**VINYL ACETYLENE:**
**TOXICITY DATA:** 97200 mg/m³ inhalation-mouse LC₅₀
**LOCAL EFFECTS:**
Irritant: inhalation, skin, eye

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

**TARGET ORGANS:** central nervous system

### 12. ECOLOGICAL INFORMATION

**FATE AND TRANSPORT:**
**KOW:** 1.4 (log = 0.148) estimated

**KOC:** 70 (log = 1.85) estimated

**HENRY'S LAW CONSTANT:** 2.9 E -2

**BIOCONCENTRATION:** 0.76 (estimated from Kow)

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

### 13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. D003.
14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Compressed gas, flammable, n.o.s. (VINYL ACETYLENE)
ID NUMBER: UN1954
HAZARD CLASS OR DIVISION: 2.1
LABELING REQUIREMENTS: 2.1
QUANTITY LIMITATIONS:
PASSenger AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: 150 kg

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Compressed gas, flammable, n.o.s. (VINYL ACETYLENE)
UN NUMBER: UN1954
CLASS: 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): 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: Yes
SUDDEN RELEASE: Yes


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.
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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