Section 1. Chemical product and company identification

Product Name: Vinyl Acetylene
Supplier: AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use: Synthetic/Analytical chemistry.
Synonym: Butenyne; 1-Buten-3-yne; 1-Butenyne; Monovinylacetylene; Vinylacetylene; 3-Buten-1-yne

MSDS#: 001116
Date of Preparation/Revision: 1/23/2008.
In case of emergency: 1-866-734-3438

Section 2. Hazards identification

Physical state: Gas.
Emergency overview: Warning!
FLAMMABLE GAS.
CONTENTS UNDER PRESSURE.
VAPOR MAY CAUSE FLASH FIRE.
MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYES, EYE, LENS OR CORNEA.

Inhalation:
Keep away from heat, sparks and flame. Do not puncture or incinerate container. Keep container closed. Use only with adequate ventilation.
Contact with rapidly expanding gases can cause frostbite.

Routes of entry: Inhalation

Potential acute health effects:

- Eyes: Irritating to eyes.
- Skin: Irritating to skin.
- Inhalation: Irritating to respiratory system.
- Ingestion: Ingestion is not a normal route of exposure for gases

Potential chronic health effects:

- CARCINOGENIC EFFECTS: Not available.
- MUTAGENIC EFFECTS: Not available.
- TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by overexposure:
Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological Information (section 11)

Section 3. Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>% Volume</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinyl Acetylene</td>
<td>689-97-4</td>
<td>100</td>
<td>Ministry of Labor and Social Policy and Ministry of Health (Bulgaria, 9/2006). Sensitizer skin TWA: 20 mg/m³ 8 hour(s). LV Nat. Standardisation and Meterological Centre (Latvia, 11/2004). TWA: 20 mg/m³ 8 hour(s).</td>
</tr>
</tbody>
</table>
Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

**Eye contact**: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin contact**: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Frostbite**: Try to warm up the frozen tissues and seek medical attention.

**Inhalation**: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**Ingestion**: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

- **Flammability of the product**: Flammable.
- **Flash point**: Open cup: <-5°C (23°F).
- **Flammable limits**: Lower: 2% Upper: 100%
- **Products of combustion**: These products are carbon oxides (CO, CO₂).
- **Fire fighting media and instructions**: In case of fire, use water spray (fog), foam, dry chemicals, or CO₂.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

Extremely flammable. Gas may accumulate in confined areas, travel considerable distance to source of ignition and flash back causing fire or explosion.

Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

- **Personal precautions**: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

- **Environmental precautions**: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and storage

- **Handling**: Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire, minimize ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

- **Storage**: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).
Section 8. Exposure Controls, Personal Protection

**Engineering controls**
- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. The engineering controls also need to keep gas, vapor or dust concentrations below any explosive limits. Use explosion-proof ventilation equipment.

**Personal protection**

**Eyes**
- Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

**Skin**
- Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory**
- Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

- The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

**Hands**
- Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Personal protection in case of a large spill**
- A self-contained breathing apparatus should be used to avoid inhalation of the product.

Section 9. Physical and chemical properties

**Molecular weight**
- 52.08 g/mole

**Molecular formula**
- C4-H4

**Boiling/condensation point**
- Decomposition temperature: 4.85°C (40.7°F)

**Melting/freezing point**
- Decomposition temperature: 4.85°C (40.7°F)

**Critical temperature**
- Not available.

**Vapor density**
- 1.8 (Air = 1)

**Specific Volume (ft³/lb)**
- 0.555556

**Gas Density (lb/ft³)**
- 1.8

Section 10. Stability and reactivity

**Stability and reactivity**
- The product is stable.

**Incompatibility with various substances**
- Highly reactive with oxidizing agents.

Section 11. Toxicological information

**Ingredient name**
- Vinyl Acetylene

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>63587 ppm (1 hour(s))</td>
<td>Inhalation</td>
<td>Rat</td>
</tr>
</tbody>
</table>

**Chronic effects on humans**
- May cause damage to the following organs: upper respiratory tract, skin, eyes, eye, lens or cornea.

**Other toxic effects on humans**
- Not considered to be toxic for humans.

**Specific effects**

**Carcinogenic effects**
- No known significant effects or critical hazards.

**Mutagenic effects**
- No known significant effects or critical hazards.

**Reproduction toxicity**
- No known significant effects or critical hazards.
Vinyl Acetylene

Section 12. Ecological information

- **Products of degradation**: These products are carbon oxides (CO, CO₂) and water.
- **Toxicity of the products of biodegradation**: The product itself and its products of degradation are not toxic.
- **Environmental fate**: Not available.
- **Environmental hazards**: No known significant effects or critical hazards.
- **Toxicity to the environment**: Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

Section 14. Transport information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>Packing group</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>UN1954</td>
<td>Compressed Gases Flammable, N.O.S. (VINYL ACETYLENE)</td>
<td>2.1</td>
<td>Not applicable (gas).</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TDG Classification</td>
<td>UN1954</td>
<td>Compressed Gases Flammable, N.O.S. (VINYL ACETYLENE)</td>
<td>2.1</td>
<td>Not applicable (gas).</td>
<td>-</td>
<td>Explosive Limit and Limited Quantity Index 0.125 ERAP Index 3000 Passenger Carrying Ship Index Forbidden Passenger Carrying Road or Rail Index Forbidden</td>
</tr>
<tr>
<td>Mexico Classification</td>
<td>UN1954</td>
<td>Compressed Gases Flammable, N.O.S. (VINYL ACETYLENE)</td>
<td>2.1</td>
<td>Not applicable (gas).</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Section 15. Regulatory information

**United States**

**U.S. Federal regulations**: TSCA 8(b) inventory: 1-buten-3-yne
- SARA 302/304/311/312 extremely hazardous substances: No products were found.
- SARA 302/304 emergency planning and notification: No products were found.
- SARA 302/304/311/312 hazardous chemicals: 1-buten-3-yne
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification: 1-buten-3-yne: Fire hazard, reactive
- Clean Water Act (CWA) 307: No products were found.
- Clean Water Act (CWA) 311: No products were found.
- Clean air act (CAA) 112 accidental release prevention: 1-buten-3-yne
Vinyl Acetylene

State regulations:
- Pennsylvania RTK: 1-buten-3-yne: (generic environmental hazard)
- Massachusetts RTK: 1-buten-3-yne

Canada
WHMIS (Canada):
- Class A: Compressed gas.
- Class B-1: Flammable gas.
- CEPA DSL: 1-buten-3-yne

Section 16. Other information

United States
Label Requirements:
- FLAMMABLE GAS.
- CONTENTS UNDER PRESSURE.
- VAPOR MAY CAUSE FLASH FIRE.
- MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYES, EYE, LENS OR CORNEA.

Canada
Label Requirements:
- Class A: Compressed gas.
- Class B-1: Flammable gas.

Hazardous Material Information System (U.S.A.):
- Health: 1
- Fire hazard: 4
- Reactivity: 0
- Personal protection: C

National Fire Protection Association (U.S.A.):
- Flammability: 4
- Health: 1
- Instability: 3
- Special:

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.