Material Name: VINYL CHLORIDE

Manufacturer Information
ADVANCED GAS TECHNOLOGIES
1401 Stauffer Road
Palm, PA 18070-0035
Mfg Contact: Outside the US: 703-572-3887 (Collect Calls Accepted)

Chemical Family
halogenated, aliphatic

Synonyms
Mtg msds 97; 1-Chloroethylene; 1-Chloroethene; Chloroethylene; Chlorethane; Chloroethylene; Ethylene monochloride; Monochloroethylene; Monochloro ethene; Monochloroethene; Vinyl chloride monomer; Vinyl chloride, inhibited; Vinyl C monomer; RCRA U043; UN 1086; C2H3Cl; RTECS: KU9625000

**Section 2 - HAZARDS IDENTIFICATION**

EMERGENCY OVERVIEW
Color: colorless
Physical Form: gas
Odor: faint odor, sweet odor
Health Hazards: harmful if swallowed, skin irritation, eye irritation, central nervous system depression, cancer hazard (in humans)
Physical Hazards: Flammable gas. May cause flash fire. May polymerize. Containers may rupture or explode.

POTENTIAL HEALTH EFFECTS

Inhalation
Short Term: irritation, nausea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, joint pain, loss of coordination, hearing loss, lung congestion
Long Term: impotence, bluish skin color, blood disorders, liver damage, cancer

Skin
Short Term: irritation, blisters
Long Term: irritation, blisters

Eye
Short Term: irritation, eye damage
Long Term: irritation, eye damage

Ingestion
Short Term: frostbite
Long Term: cancer

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-01-4</td>
<td>Vinyl chloride</td>
<td>&gt;99.9</td>
</tr>
<tr>
<td>Not Available</td>
<td>Inhibitors</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>108-95-2</td>
<td>Phenol</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>
**Section 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**
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.

**Eyes**
Wash eyes immediately with large amounts of water, 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 Physicians**
For inhalation, consider oxygen.

**Section 5 - FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

**NFPA Ratings:**
- Health: 2
- Fire: 4
- Reactivity: 1

**Hazard Scale:**
0 = Minimal  1 = Slight  2 = Moderate  3 = Serious  4 = Severe

**Flammable Properties**
Severe fire hazard. Severe explosion hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

**Extinguishing Media**
carbon dioxide regular dry chemical  
Large fires: Use regular foam or flood with fine water spray.

**Fire Fighting Measures**
Move container from fire area if it can be done without risk. 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.
**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Water Release**
Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

**Occupational spill/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. Ventilate closed spaces before entering. 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).

**Section 7 - HANDLING AND STORAGE**

**Storage Procedures**

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Analysis**

- **Vinyl chloride (75-01-4)**
  - ACGIH: 1 ppm TWA
  - OSHA (final): 5 ppm STEL (see 29 CFR 1910.1017)
    - 1 ppm TWA

- **Phenol (108-95-2)**
  - ACGIH: 5 ppm TWA
  - Skin - potential significant contribution to overall exposure by the cutaneous route
  - OSHA (final): 5 ppm TWA; 19 mg/m3 TWA
    - Prevent or reduce skin absorption
  - OSHA (vacated): 5 ppm TWA; 19 mg/m3 TWA
    - Prevent or reduce skin absorption
  - NIOSH: 5 ppm TWA; 19 mg/m3 TWA
    - 15.6 ppm Ceiling 15 min; 60 mg/m3 Ceiling 15 min
    - Potential for dermal absorption

**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.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eyes/Face**
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Protective Clothing**
Wear appropriate chemical resistant clothing.
Glove Recommendations

Respiratory Protection
The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
OSHA Standard:
NIOSH Recommendations:
At any detectable concentration -
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.
Any appropriate escape-type, self-contained breathing apparatus.

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

<table>
<thead>
<tr>
<th>Physical State: Gas</th>
<th>Appearance: Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color: colorless</td>
<td>Physical Form: gas</td>
</tr>
<tr>
<td>Odor: faint odor, sweet odor</td>
<td>Odor Threshold: 260 ppm</td>
</tr>
<tr>
<td>Melting Point: -154 °C</td>
<td>Boiling Point: -13 °C</td>
</tr>
<tr>
<td>Flash Point: -78 °C (CC)</td>
<td>LEL: 3.6 %</td>
</tr>
<tr>
<td>UEL: 33 %</td>
<td>Vapor Pressure: 2515.6 mmHg @ 21.1 °C</td>
</tr>
<tr>
<td>Vapor Density (air = 1): 2.2</td>
<td>Specific Gravity (water = 1): 0.9106</td>
</tr>
<tr>
<td>Water Solubility: 0.25 %</td>
<td>Auto Ignition: 472 °C</td>
</tr>
<tr>
<td>Viscosity: 0.01072 cP @ 20 °C</td>
<td>Molecular Weight: 62.50</td>
</tr>
<tr>
<td>Molecular Formula: C-H2-C-H-Cl</td>
<td></td>
</tr>
</tbody>
</table>

Solvent Solubility
Soluble: alcohol, ether, carbon tetrachloride, benzene

*** Section 10 - STABILITY AND REACTIVITY ***

Chemical Stability
May polymerize. Avoid contact with light or storage and use above room temperature.

Conditions to Avoid
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Materials to Avoid
metal carbide, metals, oxidizing materials, peroxides.

Decomposition Products
halogenated compounds oxides of carbon phosgene
Possibility of Hazardous Reactions
May polymerize. Avoid contact with heat, light, air, water or incompatible materials. Closed containers may rupture violently.

**Section 11 - TOXICOLOGICAL INFORMATION**

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
- **Vinyl chloride (75-01-4)**
  - Oral LD50 Rat: 500 mg/kg
- **Phenol (108-95-2)**
  - Oral LD50 Rat: 317 mg/kg; Dermal LD50 Rat: 525 mg/kg; Dermal LD50 Rabbit: 630 mg/kg; Inhalation LC50 Rat: 316 mg/m3/4H

**Acute Toxicity Level**
- **Vinyl chloride (75-01-4)**
  - Toxic: ingestion.
  - Non Toxic: inhalation.
- **Phenol (108-95-2)**
  - Highly Toxic: inhalation.
  - Toxic: dermal absorption, ingestion.

**Component Carcinogenicity**
- **Vinyl chloride (75-01-4)**
  - ACGIH: A1 - Confirmed Human Carcinogen
  - IARC: Monograph 97 [2008]; Supplement 7 [1987]; Monograph 19 [1979] (Group 1 (carcinogenic to humans))
  - DFG: Category 1 (causes cancer in man)
  - Present Known Human Carcinogen
- **Phenol (108-95-2)**
  - ACGIH: A4 - Not Classifiable as a Human Carcinogen
  - IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))
  - DFG: Category 3B (could be carcinogenic for man)

**Local Effects**
- **Vinyl chloride (75-01-4)**
  - Irritant: skin, eye.
- **Phenol (108-95-2)**
  - Corrosive: inhalation, skin, eye, ingestion.

**Target Organs**
- **Vinyl chloride (75-01-4)**
  - central nervous system.
- **Phenol (108-95-2)**
  - central nervous system.

**Additional Data**
Stimulants such as epinephrine may induce ventricular fibrillation. May cause birth defects.
** *Section 12 - ECOLOGICAL INFORMATION***

Component Analysis - Aquatic Toxicity

Vinyl chloride (75-01-4)
- **Fish:** 96 Hr LC50 Brachydanio rerio: 210 mg/L
- **Algae:** 48 Hr EC50 Chilomonas paramecium: 943 mg/L

Phenol (108-95-2)
- **Fish:** 96 Hr LC50 Pimephales promelas: 11.9-50.5 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 20.5-25.6 mg/L [static]; 96 Hr LC50 Pimephales promelas: 32 mg/L; 96 Hr LC50 Oncorhynchus mykiss: 5.449-6.789 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 7.5-14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 4.23-7.49 mg/L [semi-static]; 96 Hr LC50 Oncorhynchus mykiss: 5.0-12.0 mg/L; 96 Hr LC50 Lepomis macrochirus: 13.5 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 11.9-25.3 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 11.5 mg/L [semi-static]; 96 Hr LC50 Poecilia reticulata: 34.09-47.64 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 31 mg/L [semi-static]; 96 Hr LC50 Brachydanio rerio: 27.8 mg/L; 96 Hr LC50 Cyprinus carpio: 0.00175 mg/L [semi-static]; 96 Hr LC50 Oryzias latipes: 33.9-43.3 mg/L [flow-through]; 96 Hr LC50 Oryzias latipes: 187-279 mg/L [static]
- **Algae:** 96 Hr EC50 Pseudokirchneriella subcapitata: 46.42 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.0188 - 0.1044 mg/L [static]; 72 Hr EC50 Desmodesmus subspicatus: 187 - 279 mg/L [static]

Invertebrate: 48 Hr EC50 Daphnia magna: 4.24 - 10.7 mg/L [Static]; 48 Hr EC50 Daphnia magna: 10.2 - 15.5 mg/L

*** Section 13 - DISPOSAL CONSIDERATIONS ***

**Disposal Methods**

Dispose in accordance with all applicable regulations. Hazardous Waste Number(s): D043. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.2 mg/L. U043.

**Component Waste Numbers**

Vinyl chloride (75-01-4)
- **RCRA:** waste_number U043
- 0.2 mg/L regulatory level

Phenol (108-95-2)
- **RCRA:** waste_number U188

*** Section 14 - TRANSPORT INFORMATION ***

**US DOT Information**

- **Shipping Name:** Vinyl chloride, stabilized
- **UN/NA #:** UN1086  **Hazard Class:** 2.1
- **Required Label(s):** 2.1

**TDG Information**

- **Shipping Name:** Vinyl chloride, stabilized
- **UN #:** UN1086  **Hazard Class:** 2.1
- **Required Label(s):** 2.1
**Section 15 - REGULATORY INFORMATION**

**U.S. Federal Regulations**
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

**Vinyl chloride (75-01-4)**
- 1 lb final RQ; 0.454 kg final RQ

**Vinyl chloride (75-01-4)**
- SARA 313: 0.1 % de minimis concentration
- CERCLA: 1 lb final RQ; 0.454 kg final RQ

**Phenol (108-95-2)**
- SARA 302: 500 lb lower threshold TPQ; 10000 lb upper threshold TPQ
- 1000 lb final RQ; 454 kg final RQ
- SARA 313: 1.0 % de minimis concentration
- CERCLA: 1000 lb final RQ; 454 kg final RQ

**SARA 311/312**
- Acute Health: Yes
- Chronic Health: Yes
- Fire: Yes
- Pressure: Yes
- Reactive: Yes

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
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<tbody>
<tr>
<td>Vinyl chloride</td>
<td>75-01-4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
WARNING! This product contains a chemical known to the state of California to cause cancer.

**Canada WHMIS**
The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

**Vinyl chloride (75-01-4)**
- 0.1 %

**Component Analysis - Inventory**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
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<tr>
<td>Vinyl chloride</td>
<td>75-01-4</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
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<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
</tbody>
</table>
Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Farenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

End of Sheet 00233342