

ACETYLENE

ACE

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Ethine Ethyne	Compressed gas Colorless Mild garlic odor
This flammable gas is slightly lighter than air, and will disperse slowly unless confined.	
<p>Shut off ignition sources and call fire department. Stop discharge if possible. Keep people away. Avoid inhalation. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies.</p>	
Fire	<p>FLAMMABLE. Containers may explode in fire. Flashback along gas trail may occur. May explode if ignited in an enclosed area. Stop flow of gas if possible. Cool exposed containers and protect men effecting the shutoff with water. Let fire burn.</p>
Exposure	<p>CALL FOR MEDICAL AID. GAS Not irritating to eyes, nose or throat. If inhaled will cause headache, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p>
Water Pollution	Not harmful to aquatic life.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
 Chemical and Physical Treatment: Burn

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed
- 2.2 **Formula:** C₂H₂
- 2.3 **IMO/UN Designation:** 2.0/1001
- 2.4 **DOT ID No.:** 1001
- 2.5 **CAS Registry No.:** 74-86-2
- 2.6 **NAERG Guide No.:** 116
- 2.7 **Standard Industrial Trade Classification:** 51119

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Air supply respirator in areas of high concentration. Avoid all sources of ignition.
- 3.2 **Symptoms Following Exposure:** Headache, dizziness and loss of consciousness may occur. Death from "smothering" may occur if oxygen content of the air is severely reduced by dilution with acetylene.
- 3.3 **Treatment of Exposure:** INHALATION: no specific antidote known; remove victim to fresh air, keep him warm and quiet, and call a doctor; recovery is usually rapid. If patient is unconscious, administer oxygen; if breathing has stopped, give artificial respiration.
- 3.4 **TLV-TWA:** Not listed.
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Not pertinent
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Not pertinent
- 3.10 **Vapor (Gas) Irritant Characteristics:** None
- 3.11 **Liquid or Solid Characteristics:** Not pertinent
- 3.12 **Odor Threshold:** Currently not available
- 3.13 **IDLH Value:** Not listed.
- 3.14 **OSHA PEL-TWA:** Not listed.
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:**
Gas
- 4.2 **Flammable Limits in Air:** 2.5%-100%
- 4.3 **Fire Extinguishing Agents:** Stop flow of gas
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Carbon dioxide, dry chemical and water spray are not generally recommended because the discharged gas or volatile liquid may create a more serious explosion hazard.
- 4.5 **Special Hazards of Combustion Products:** Not pertinent
- 4.6 **Behavior in Fire:** May explode in fire
- 4.7 **Auto Ignition Temperature:** 581°F
- 4.8 **Electrical Hazards:** Not pertinent Class I, Group A
- 4.9 **Burning Rate:** Not pertinent
- 4.10 **Adiabatic Flame Temperature:** 2907. (Est.)
- 4.11 **Stoichiometric Air to Fuel Ratio:** 13.18 (Est.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** Currently not available
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** Under certain conditions forms spontaneously explosive compounds with copper
- 5.3 **Stability During Transport:** Stable as shipped
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** 1000 cc/l/hr/sunfish/not killed/fresh water
- 6.2 **Waterfowl Toxicity:** Not pertinent
- 6.3 **Biological Oxygen Demand (BOD):** Not pertinent
- 6.4 **Food Chain Concentration Potential:** Not pertinent
- 6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Commercial grade acetylene is supplied dissolved in acetone under pressure in cylinders.
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable gas
- 8.2 **49 CFR Class:** 2
- 8.3 **49 CFR Package Group:** Not listed.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	1
Flammability (Red).....	4
Instability (Yellow).....	3
- 8.6 **EPA Reportable Quantity:** Not listed
- 8.7 **EPA Pollution Category:** Not listed
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Gas
- 9.2 **Molecular Weight:** 26.04
- 9.3 **Boiling Point at 1 atm:** -119°F = 84.0°C = 189.2°K
- 9.4 **Freezing Point:** Not pertinent
- 9.5 **Critical Temperature:** 95.4°F = 35.2°C = 308.4°K
- 9.6 **Critical Pressure:** 890.7 psia = 60.59 atm = 6.138 MN/m²
- 9.7 **Specific Gravity:** 0.613 at -80°C (liquid)
- 9.8 **Liquid Surface Tension:** Not pertinent
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 0.9
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.235
- 9.12 **Latent Heat of Vaporization:** Not pertinent
- 9.13 **Heat of Combustion:** -20,747 Btu/lb = -11,526 cal/g = -482.57 X 10³ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	NOT P E R T I N E N T		NOT P E R T I N E N T		NOT P E R T I N E N T		NOT P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	NOT P E R T I N E N T	-112	19.360	-112	0.13510	0	0.376
		-110	20.560	-110	0.14260	25	0.386
		-108	21.810	-108	0.15050	50	0.394
		-106	23.130	-106	0.15860	75	0.403
		-104	24.510	-104	0.16720	100	0.411
		-102	25.950	-102	0.17600	125	0.419
		-100	27.460	-100	0.18520	150	0.427
		-98	29.030	-98	0.19470	175	0.434
		-96	30.670	-96	0.20460	200	0.441
		-94	32.390	-94	0.21490	225	0.448
		-92	34.170	-92	0.22550	250	0.455
		-90	36.040	-90	0.23650	275	0.461
		-88	37.980	-88	0.24790	300	0.467
		-86	40.000	-86	0.25970	325	0.473
		-84	42.100	-84	0.27190	350	0.479
		-82	44.290	-82	0.28450	375	0.484
		-80	46.560	-80	0.29750	400	0.489
		-78	48.920	-78	0.31090	425	0.494
		-76	51.370	-76	0.32480	450	0.499
						475	0.504
						500	0.509
						525	0.513
						550	0.517
						575	0.521
						600	0.525