

MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

PRODUCT NAME: Acetylene, dissolved
CHEMICAL NAME: Acetylene **FORMULA:** C₂H₂
SYNONYMS: Ethyne, welding gas
MANUFACTURER: Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501
PRODUCT INFORMATION: 1-800-752-1597
MSDS NUMBER: 1001 **REVISION:** 5
REVISION DATE: March 1998 **REVIEW DATE:** March 1998

SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

Acetylene is sold as pure product >99%

CAS NUMBER: 74-86-2

EXPOSURE LIMITS:

OSHA: None

ACGIH: Simple asphyxiant

NIOSH: None

SECTION 3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Acetylene is a flammable, colorless, dissolved gas packaged in cylinders under pressure. It poses an immediate fire and explosive hazard when concentrations exceed 2.5%. It will decompose violently in its free state under pressure in excess of 15 psig. High concentrations that will cause suffocation are within the flammable range and must not be entered.

EMERGENCY TELEPHONE NUMBERS

(800) 523-9374 Continental U.S., Canada, and Puerto Rico

(610) 481-7711 other locations

ACUTE POTENTIAL HEALTH EFFECTS:

ROUTES OF EXPOSURE:

INHALATION: Acetylene is a simple asphyxiant. It should be noted that before suffocation could occur, the lower flammability limit of acetylene in air would be exceeded; possibly causing both an oxygen deficient and an explosive atmosphere. Exposure to moderate concentrations may cause dizziness, headache, and unconsciousness.

EYE CONTACT: None

SKIN CONTACT: None

REPEATED (CHRONIC) POTENTIAL HEALTH EFFECTS:

ROUTE OF ENTRY: Inhalation

SYMPTOMS: Acetylene is a non-toxic gas that has no chronic harmful effects even in high concentrations. Acetylene has been used as an anesthetic.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None

CARCINOGENICITY: Acetylene is not listed by NTP, OSHA or IARC.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove person to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

EYE CONTACT: Not applicable

SKIN CONTACT: Not applicable

INGESTION: Not applicable

NOTES TO PHYSICIAN: None

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT:
Not applicable

AUTOIGNITION:
581°F (305°C)

FLAMMABLE RANGE:
2.5% - 81%

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Water.

SPECIAL FIRE FIGHTING INSTRUCTIONS: Shut off source of acetylene if possible. Extinguish fire only if flow can be stopped. Keep adjacent cylinders cool by spraying large amounts of water until the fire burns itself out and the cylinders are cool. If a flame is extinguished and acetylene continues to escape, an explosive re-ignition could occur.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Excessive heat or fire will cause fusible metal pressure relief device to melt allowing acetylene to escape. Cylinders may rupture violently if sidewalls are exposed to direct flame impingement.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide.

SECTION 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Evacuate immediate area. Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation. Shut off source of acetylene, if possible. Isolate any leaking cylinder. If leaking from cylinder, valve, or fusible metal pressure relief device, contact your supplier.

SECTION 7. HANDLING AND STORAGE

STORAGE: Store and use with adequate ventilation. Cylinders should be separated from oxygen and other oxidizers by a minimum distance of 20 ft. or by a barricade of non-combustible material at least 5 ft. high having a fire resistance rating of at least ½ hour. Storage in excess of 2,500 cubic feet. is prohibited in buildings with other occupancies. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling or being knocked over. Post "No Smoking Or Open Flames" signs in the storage or use areas. There should be no sources of ignition. All electrical equipment should be explosion-proof in the storage areas. Storage areas must meet National Electric Codes for class 1

hazardous areas. Do not allow storage temperature to exceed 125 °F(52 °C). Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for a long periods of time.

HANDLING: Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. All acetylene piped systems and associated equipment must be grounded. Electrical equipment should be non-sparking or explosion-proof. Never use copper piping for acetylene service, only steel or wrought iron pipe should be used. An acetylene cylinder valve should be opened the minimum amount required to deliver acceptable flow so that it can be closed as quickly as possible in an emergency situation. Do not open acetylene cylinder valves more than one and one-half turns. Never use acetylene in excess of 15 psig pressure. Acetylene cylinders are heavier than other cylinders because they are packed with a porous filler material and acetone. Leak check with soapy water; never use a flame. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Use the proper CGA connections, DO NOT USE ADAPTERS.

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressures to be encountered. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

VENTILATION: Provide adequate natural or explosion-proof ventilation to ensure acetylene does not reach its lower flammable limit of 2.5%.

RESPIRATORY PROTECTION:

Emergency Use: Air supplied respirators are required in oxygen-deficient atmospheres (air purifying respirators will not function). Before entering area you must check for flammable or oxygen deficient atmospheres.

SKIN PROTECTION: Work gloves are recommended when handling cylinders.

EYE PROTECTION: Safety glasses are recommended when handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Safety shoes recommended when handling containers.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, ODOR AND STATE: Colorless gas. Acetylene of 100% purity is odorless but commercial purity has a distinctive garlic-like odor.

MOLECULAR WEIGHT: 26.04

BOILING POINT (10 psig): -103.4 °F (-75 °C)

SPECIFIC GRAVITY (Air = 1): 0.906

FREEZING POINT / MELTING POINT: -116 °F (-82.2 °C)

VAPOR PRESSURE (At 70°F (21.1°C)): 635 psig

GAS DENSITY (At 32°F (0°C) and 1 atm): 0.07314 lb./cu ft

EVAPORATION RATE (Butyl Acetate = 1): Not applicable (Gas)

SOLUBILITY IN WATER (Vol./Vol. at 32° F (0°C) and 1 atm): 1.7

SECTION 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Unstable. Stable as shipped. Do not use at pressure above 15 psig.

CONDITIONS TO AVOID: Cylinders should not be exposed to sudden shock or sources of heat.

INCOMPATIBILITY (Materials to Avoid): Under certain conditions, acetylene can react with copper, silver, and mercury to form acetylides, compounds which can act as ignition sources. Brasses containing less than 65% copper in the alloy and certain nickel alloys are suitable for acetylene service under normal conditions. Acetylene can react explosively when combined with oxygen and other oxidizers including all halogens and halogen compounds. The presence of moisture, certain acids, or alkaline materials tends to enhance the formation of copper acetylides.

REACTIVITY:

- A) **HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen, carbon.
- B) **HAZARDOUS POLYMERIZATION:** Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

LC₅₀ (Inhalation): Acetylene is a simple asphyxiant.

LD₅₀ (Oral): None reported

LD₅₀ (Dermal): None reported

SKIN CORROSIVITY: Acetylene is not corrosive.

ADDITIONAL NOTES TO PHYSICIAN: None

SECTION 12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected. Acetylene does not contain any Class I or Class II ozone depleting chemicals (40 CFR Part 82). Acetylene is not listed as a marine pollutant by DOT (49 CFR Part 171).

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier. Unserviceable cylinders should be returned to the supplier for safe and proper disposal.

SECTION 14. TRANSPORT INFORMATION

DOT SHIPPING NAME: Acetylene, dissolved.

HAZARD CLASS: 2.1 (Flammable gas.)

IDENTIFICATION NUMBER: UN1001

SHIPPING LABEL(s): Flammable gas.

PLACARD (When required): Flammable gas.

SPECIAL SHIPPING INFORMATION: Transport secured upright in a well ventilated truck. Never transport in passenger compartment or trunk of a vehicle. Shipment of compressed gas cylinders which have not been filled with the owners consent is a violation of Federal law (49 CFR Part 173.301(b)).

SECTION 15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA - ENVIRONMENTAL PROTECTION AGENCY

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980.
(40 CFR Parts 117 and 302)

Reportable Quantity (RQ): None

SARA TITLE III: Superfund Amendment and Reauthorization Act

SECTIONS 302/304: Emergency Planning and Notification (40 CFR Part 355)

Extremely Hazardous Substances: None

Threshold Planning Quantity (TPQ): None

SECTIONS 311/312: Hazardous Chemical Reporting (40 CFR Part 370)

IMMEDIATE HEALTH: No PRESSURE: Yes

DELAYED HEALTH: No REACTIVITY: Yes

FIRE: Yes

SECTION 313: Toxic Chemical Release Reporting (40 CFR Part 372)

Acetylene does not require reporting under Section 313

40 CFR PART 68: Risk Management Programs for Chemical Accidental Release.

Acetylene is a regulated substance in quantities of 10,000 pounds (4,553 kg) or greater.

TSCA: Toxic Substance Control Act

Acetylene is listed on the TSCA inventory.

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR Part 1910.119: Process Safety Management of Highly Hazardous Chemicals.

Acetylene is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable gas on site in one location, in quantities of 10,000 pounds (4,553 kg) or greater is covered under this regulation unless it is used as fuel.

STATE REGULATIONS:

CALIFORNIA:

Proposition 65: This product does NOT contain any listed substances which the State of California requires warning under this statute.

SECTION 16. OTHER INFORMATION

OTHER INFORMATION:

NFPA RATINGS:

HEALTH: = 0
FLAMMABILITY: = 4
REACTIVITY: = 3
SPECIAL: = None

HMIS RATINGS:

HEALTH: = 1
FLAMMABILITY: = 4
REACTIVITY: = 3