

**Material Safety
Data Sheet**

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MANUFACTURER'S PHONE NO.—800-353-6671 IN PENNSYLVANIA 800-353-6681	TRADE NAME AND SYNONYMS Acetylene, Ethyne, Ethine
FORMULA C ₂ H ₂	CHEMICAL NAME AND SYNONYMS Acetylene, Ethyne, Ethine
ISSUED: 31 January 1978 REVISED: 23 October 1985	CHEMICAL FAMILY Alkynes CAS# 74-86-2

HEALTH HAZARD DATA

IMMEDIATE HAZARD
Acetylene is classified as a simple asphyxiant and has no threshold limit value (TLV).
Inertness of acetylene is relative. Contact with skin on which acetylene is present in quantities sufficient to cause asphyxiation, dizziness, shortness of breath, and loss of consciousness may occur if the gas is present in quantities sufficient to displace the oxygen concentration in air. Symptoms of asphyxia occur only when the gas concentration in the breathing zone is in the flammable range and the mixture has not ignited. (DO NOT ENTER AREAS WITHIN THE FLAMMABLE RANGE DUE TO THE IMMEDIATE FIRE AND EXPLOSION HAZARD.) Use a suitable flammable gas meter (explosimeter) calibrated for acetylene to measure concentration of gas in the air.

TOXICOLOGICAL INFORMATION
Acetylene is a simple asphyxiant, irritant, and anesthetic. About 100 mg per liter may be tolerated for 0.5-1.0 hour. There is no experimental evidence of chronic harmful effects.

ACUTE TOXICITY
First degree and minor second degree thermal burns from fires should be immersed in cool water for 30 minutes. Major second and third degree burns should be covered in the cleanest material available. Seek immediate aid of a physician. Persons suffering from lack of oxygen should be moved to areas with normal atmosphere. Assisted respiration and supplemental oxygen should be given if the victim is not breathing.

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS
In air @ 1 atm
LFL 2.5%
UL 100%
ELECTRICAL CLASSIFICATION
Class 1, Group A

EXTINGUISHING MEDIA
Carbon dioxide, dry chemical, Halon

HAZARD
Acetylene is extremely flammable and explosive. It may decompose violently in its free state under pressure in excess of 15 psig. It burns with an intensely hot flame. Potential explosion hazard exists from reignition of fire extinguished without shutting off acetylene source. Ignites very easily due to low minimum ignition energy; very wide flammable limits. Acetylene gas has an approximate specific gravity of 1.0 and tends to stay in pockets rather than dissipate.

PHYSICAL DATA

Boiling point (°F) @ 1 atm -119.2°F (-84.0°C)	Freezing point (°F) @ 1 atm -113.4°F (-80.8°C)
Gas density (air = 1) @ 62.2°F (16.8°C) 590 psia (40 atm)	Solubility in water @ 64°F (18°C), 1 atm 1.0 CuF/CuFH ₂ O
Specific gravity (air = 1) @ 68°F (20°C), 1 atm 0.9681	Specific gravity (water = 1) @ -116°F (-82°C), 1 atm 0.62
Viscosity (centipoise) @ 68°F (20°C), 1 atm 0.906	

Pure acetylene is colorless and odorless. Impurities in carbide generated acetylene impart a characteristic garlic-like odor.

DISCLAIMER

Information contained in this data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or infringe any patent of this Company or others covering any process, composition of matter or use. Since the Company shall have no control of the use of the product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.

REACTIVITY DATA

STABILITY	UNSTABLE	X	CONDITIONS TO AVOID
	STABLE	X	Never utilize free gas outside the cylinder at pressures in excess of 15 psig. Avoid mechanical shocks to containers of acetylene. Never expose cylinders or acetylene systems to sources of heat.

COMPATIBILITY (Acetylene is inert)
Acetylene reacts with oxidizers such as oxygen, and halogens. Forms explosive compounds with copper, brass, copper salts, Hg and Hg salts, K, Ag and Vg salts, and HNO₃.
Acetylene will decompose into elemental carbon and hydrogen under the above conditions.

HAZARDOUS DECOMPOSITION PRODUCTS	MAY OCCUR	X	CONDITIONS TO AVOID
CO ₂ CARBON DIOXIDE	WILL NOT OCCUR	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Erect a barrier to prevent flammable mixture from forming. Remove sources of ignition, heat, sparks, etc. Avoid entering area of flammable atmosphere. Carefully remove cylinders with slow leaks to a remote outdoor location. Contact Air Products for assistance.
Do not attempt to dispose of residual gaseous acetylene in cylinders. Return to Air Products for disposal.

SPECIAL PROTECTION INFORMATION

SEPARATION PROTECTION (Safety type)	SPECIAL
Oxygen-deficient atmospheres are in the flammable range. DO NOT ENTER. Respirators will not function.	Mechanical ventilation for enclosed storage areas must meet National Electrical Code requirements for Class 1, Group A
Natural or mechanical	OTHER
Other gas is present.	

PROTECTIVE CLOTHING
Ordinary leather work gloves recommended for cylinder handling. Welders gloves required for cutting and welding operations.

PERSONAL PROTECTION
Safety glasses recommended for handling cylinders. Welders goggles, etc., required for cutting and welding.

OTHER PROTECTIVE EQUIPMENT
Leather apron and other standard protective equipment for cutting and welding.

SPECIAL PRECAUTIONS*

REGULATORY INFORMATION
Acetylene shipments must be in accordance with Department of Transportation (DOT) regulations using the DOT - FLAMMABLE GAS label. Consult DOT regulations for details on the shipping of hazardous materials.
Jigs only in well ventilated areas. Acetylene gas cylinders contain gas at high pressure and should be handled with care. Use a pressure-reducing regulator set at least 15 psig. Always keep acetylene cylinders upright and secure cylinders when in use. Never expose an acetylene cylinder to heat. Always open and close acetylene valves slowly. Return cylinders to Air Products with positive pressure and cylinder valve closed. Avoid dragging, rolling or sliding cylinders, even for a short distance. Use a suitable hand truck. For additional handling recommendations on compressed gas cylinders, consult Compressed Gas Association Pamphlet P-1.
Special storage recommendations:
Storage of 2500 cubic feet or less is permissible within buildings. Storage in excess of 2500 cubic feet must be outdoors or in well ventilated special rooms or buildings. Keep cylinders away from sources of heat. Storage should not be in heavy traffic areas to prevent accidental knocking over or damage from passing or falling objects. Valve caps should remain on cylinders not connected or in use. Segregate full and empty cylinders. Keep acetylene cylinders storage areas away from storage of oxygen and other oxidizers. Storage areas should be free of combustible material. Avoid exposure to areas where salt or other corrosive chemicals are present. Store acetylene cylinders with the valve end up. See Compressed Gas Association Pamphlet P-1 and National Fire Protection Association Standard No. 51 for additional storage recommendations.

SPECIAL PACKAGING RECOMMENDATIONS
Acetylene is packaged in cylinders meeting DOT specification 8 or 8AL. The cylinder contains a porous filler saturated with acetone. Acetylene stored in the cylinder is dissolved in acetone. A full cylinder should not exceed 250 psig @ 70°F.

OTHER RECOMMENDATIONS OR PRECAUTIONS
Acetylene cylinders should be stored and used in an upright position. When using acetylene, close the cylinder valve before shutting off the regulator to permit the gas to bleed from the regulator. Avoid hazardous mixtures and sources of ignition. Formation of explosive copper acetylides can be avoided by using copper alloys proved successful through use in industry. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder filled without the permission of the owner is a violation of Federal Law.

*Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.