MATERIAL SAFETY DATA SHEET

NATIONAL WELDERS

N0000302

MAJOR SUPPLIERS OF CRYOGENICS AND WELDING EQUIPMENT

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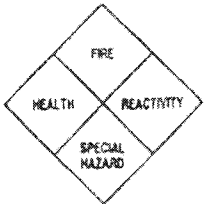
SECTION 1. MATERIAL IDENTIFICATION

PRODUCT NAME	CAS #
Acetylene	74-86-2
TRADE NAME AND SYNONYMS	**DOT I.D. NO.**
Acetylene, dissolved (D.O.T.) Ethyne	UN 1001
CHEMICAL NAME AND SYNONYMS	**DOT HAZARD CLASS**
Acetylene, Ethyne	Division 2.1
FORMULA / **CHEMICAL FAMILY**	**DESCRIPTION**
C_2H_2 / Alkyne	Heating, Cutting and Welding Fuel

NATIONAL FIRE PROTECTION ASSOCIATION CODE 704

HMIS
H: 1
F: 4
R: 3
S: None



SECTION 2. HEALTH HAZARD INFORMATION

TIME WEIGHTED AVERAGE EXPOSURE LIMIT

Acetylene is defined as a simple asphyxiant (ACGIH 1993-1994). No TWA listed by OSHA (1993). Oxygen levels should be maintained at greater than 18 Molar percent at normal atmospheric pressure (pO_2>135 torr).

SYMPTOMS OF EXPOSURE

Inhalation: Low concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. Higher concentrations so as to exclude an adequate supply of oxygen to the lungs cause unconsciousness.

TOXICOLOGICAL PROPERTIES

As a narcotic gas or intoxicant causes hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects. The major property is the exclusion of an adequate supply of oxygen to the lungs.

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RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ACETYLENE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

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SECTION 3, PHYSICAL DATA

BOILING POINT Sublimation point = -118.8°F (-83.8°C)	LIQUID DENSITY AT BOILING POINT @ -116°F (-82°C) = 38.8 lb/ft^3 (622 kg/m^3)
VAPOR PRESSURE @ 70°F @ 70°F (21.1°C) = 645 psia (4450 kPa)	GAS DENSITY AT 70°F, 1 ATM .0691 lb/ft^3 (1.107 kg/m^3)
SOLUBILITY IN WATER Soluble	FREEZING POINT -113°F (-80.6°C)
EVAPORATION RATE N/A, Dissolved gas	SPECIFIC GRAVITY (AIR = 1) @ 68°F (20°C) = 0.906

APPEARANCE AND ODOR Pure acetylene is a colorless gas with an ethereal odor. Commercial (carbide) acetylene has a distinctive garlic-like odor.

SECTION 4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Gas AUTO IGNITION TEMPERATURE 565°F (296°C)	FLAMMABLE UNITS % BY VOLUME See Page 4 LEL 2.2 UEL 80-85
EXTINGUISHING MEDIA Carbon dioxide; dry chemical	ELECTRICAL CLASSIFICATION Class 1, Group A
SPECIAL FIREFIGHTING PROCEDURES See Page 4	UNUSUAL FIRE AND EXPLOSION HAZARDS See Page 4

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES

Flammable over an extremely wide range in air. Explosive reactions may occur on ignition. Reacts explosively with halogens and halogenated compounds.

SECTION 5. REACTIVITY DATA

STABILITY Unstable ☒ Stable ☐ CONDITIONS TO AVOID See Page 4	HAZARDOUS POLYMERIZATION May Occur ☐ Will Not Occur ☒ CONDITIONS TO AVOID None
INCOMPATIBILITY (Materials to Avoid) See Page 4	HAZARDOUS DECOMPOSITION PRODUCTS Carbon and hydrogen

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.

WASTE DISPOSAL

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

SECTION 7. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

VENTILATION Hood with forced ventilation	LOCAL EXHAUST To prevent accumulation above the LEL	SPECIAL N/A
	MECHANICAL In accordancw with electrical codes	OTHER N/A

PROTECTIVE GLOVES PVC or rubber in laboratory; as required for cutting and welding	EYE PROTECTION Safety goggles or glasses

OTHER PROTECTIVE EQUIPMENT

Safety shoes, safety shower

SPECIAL NOTES:

HEALTH HAZARD DATA

TOXICOLOGICAL PROPERTIES: (Continued)

Acetylene is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.

Persons in ill health where such illness would be aggravated by exposure to acetylene should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT: (Continued)

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from uncontaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

FIRE AND EXPLOSION HAZARD DATA

UEL: (Continued)

Pure acetylene can ignite by decomposition above 30 psia (207 kPa); therefore, the UEL is 100% if the ignition source is of sufficient intensity.

SPECIAL FIRE FIGHTING PROCEDURES:

If possible, stop flow of escaping gas. Use water spray to cool surrounding containers. Keep personnel away since heated or burning cylinders can rupture violently.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURES ABOVE 30 PSIA (207 kPa). It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily reignite with possible explosive force. Acetylene has a density very similar to that of air so when leaking it does not readily dissipate.

REACTIVITY DATA

CONDITIONS TO AVOID:

Do not allow the free gas (outside of cylinder) to exceed 30 psia. Cylinders should not be exposed to sudden shock or sources of heat.

INCOMPATIBILITY (Materials to Avoid):

Oxygen and other oxidizers including all of the halogens and halogen compounds. Forms explosive acetylide compounds with copper, mercury, silver, brasses containing more than 66% copper and brazing materials containing silver or copper.

SPECIAL PRECAUTIONS

SPECIAL PACKAGING RECOMMENDATIONS: (Continued)

Follow your supplier's instructions for the maximum withdrawal rate for each size cylinder so that solvent is not withdrawn with the acetylene.

Most metals except silver, copper, mercury or brasses with more than 66% copper are compatible (noncorrosive) with acetylene.

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SPECIAL PRECAUTIONS

OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

SECTION 8. SPECIAL PRECAUTIONS AND COMMENTS

SPECIAL LABELING INFORMATION

DOT Shipping Name: Acetylene, dissolved
DOT Shipping Label: Flammable gas
DOT Hazard Class: Division 2.1
I.D. No.: UN 1001

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when removing gas from the cylinder. DO NOT ALLOW THE FREE GAS TO EXCEED 30 PSIA (207 kPa) @ 70°F (21.1°C). Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional recommendations, consult Compressed Gas Association's Pamphlets G-1, P-1, P-14 and Safety Bulletin SB-2.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage area. There should be no sources of ignition in the storage area.

For additional recommendations, consult Compressed Gas Association's Pamphlets G-1, P-1, P-14, and Safety Bulletin SB-2.

SPECIAL PACKAGING RECOMMENDATIONS

Since acetylene will explode or combust if its pressure exceeds 30 psia (207 kPa) it is shipped dissolved in acetone or dimethylformamide which is dispersed in a porous mass within the cylinder.

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OTHER RECOMMENDATIONS OR PRECAUTIONS

Earth-ground and bond all lines and equipment associated with the acetylene system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

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SPECIAL NOTES:

Reporting under SARA, Title III, Section 313 not required.