MATERIAL SAFETY DATA SHEET MATIONAL)

N0000302

National Welders P.O. Box 31007

Charlotte, NC 28231, 704-333-5475 Emergency Telephone: 800-866-4422

ChemTrec: 800-424-9300

issued: July 1994

MAJOR SUPPLIERS OF CRYOGENICS AND WELDING EQUIPMENT

ELDERS

PRODUCT NAME	CAS #	NATIONAL FIRE PROTECTION ASSOCIATION CODE 704
Acetylene	74-86-2	HMIS FRE
TRADE NAME AND SYNONYMS Acetylene, dissolved (D.O.T.)	DOT I.D. NO. UN 1001	H: 1 F: 4 HEALTH REACTIVITY
Ethyne CHEMICAL NAME AND SYNONYMS	DOT HAZARD CLASS	R: 3 S: None
Acetylene, Ethyne	Division 2.1	S: None
FORMULA CHEMICAL FAMILY	DESCRIPTION	
C ₂ H ₂ Alkyne	Heating, Cutting and	Welding Fuel

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 (p02>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.

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TRANSPORTATION

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. (Continued on Page 4)

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.

(Continued on Page 4)

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N0000302

SECTION 3, PHYSICAL DATA		
BOILING POINT	LIQUID DENSITY AT BOILING POINT	
Sublimation point = -118.8°F (-83.8°C)	$0 - 116^{\circ}F (-82^{\circ}C) = 38.8 \text{ lb/ft}^{3}(622 \text{ kg/m}^{3})$	
VAPOR PRESSURE @ 70°F	GAS DENSITY AT 70°F. 1 ATM	
$\frac{\sqrt{4700 \text{ PAESSOLE } \sqrt{7.0}}}{\sqrt{9} 70^{\circ} \text{F} (21.1^{\circ} \text{C})} = 645 \text{ psia} (4450 \text{ kPa})$.0691 1b/ft ³ (1.107 kg/m ³)	
	FREEZING POINT	
SOLUBILITY IN WATER	-113°F (-80.6°C)	
Soluble	SPECIFIC GRAVITY (AIR = 1)	
EVAPORATION RATE	@ 68°F (20°C) = 0.906	
N/A, Dissolved gas	10 08 F (20 C) = 0.500	
APPEARANCE AND ODOR Pure acetylene is a co	oforiess gas with an etherear boot.	
Commercial (carbide) acetylene has a dis	cincure garile-like out.	
SECTION 4. FIRE AND EXPLOSION HAZARD DA		
	FLAMMABLE UNITS % BY VOLUME See Page 4	
Gas Suppose Auto ignition temperature 565°F (296°C)	LEL 2.2 UEL 80-85	
	ELECTRICAL CLASSIFICATION	
EXTINGUISHING MEDIA	Class 1, Group A	
Carbon dioxide; dry chemical	UNUSUAL FIRE AND EXPLOSION HAZARDS	
SPECIAL FIREFIGHTING PROCEDURES	UNUSUAL FIRE AND EXPLOSION PACKAGE	
See Page 4	See Page 4	
•		
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GA		
clammable over an extremely wide range i	n air. Explosive reactions may occur on	
i familiable uver all excluding white language	ens and halogenated compounds.	
ignition. Reacts explosively with halogens and halogenated compounds.		
:		
SECTION 5. REACTIVITY DATA	HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID	
STABILITY CONDITIONS TO AVOID	HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID	
Unstable 🖄	May Occur	
_ See Page 4	Will Not Occur 🖾 None	
Stable U	Will 1400 Occur as	
INCOMPATIBILITY (Materials to Avoid)	HAZARDOUS DECOMPOSITION PRODUCTS	
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon and hydrogen	
See Page 4	Carbon and hydrogen	
See Page 4 SECTION 6. SPILL, LEAK AND DISPOSAL PROC	Carbon and hydrogen EDURES	
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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.

ACETYLENE MATERIAL SAFETY DATA SHEET

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.

Acetylene

SECTION 8. SPECIAL PRECAUTIONS AND COMMENTS

SPECIAL LABELING INFORMATION

DOT Shipping Name: Acetylene, dissolved DOT Hazard Class: Division 2.1 DOT Shipping Label: Flammable gas 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.

(Continued on Page 4)

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). (Continued on Page 5)

SPECIAL NOTES:

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

About the Information in this Bulletin:

*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.

Information contained in this material safety 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.

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