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 WCA GAS, INC. 01-4737

**MATERIAL
 SAFETY
 DATA SHEET**

PRODUCT NAME Ethylene	CAS # 74-85-1
TRADE NAME AND SYNONYMS Ethylene, compressed (D.O.T.)	DOT I.D. No.: UN 1962
CHEMICAL NAME AND SYNONYMS Ethylene; Ethene; Elayl; Etherin	DOT Hazard Class: Division 2 .1
	Formula C ₂ H ₄
ISSUE DATES AND REVISIONS Revised January 1995	Chemical Family: Monolefin

HEALTH HAZARD DATA

<p>TIME WEIGHTED AVERAGE EXPOSURE LIMIT Ethylene is defined as a simple asphyxiant (ACGIH 1994-1995). Oxygen levels should be maintained at greater than 18 molar % at normal</p> <p style="text-align: right;">(Continued on Page 4)</p>
<p>SYMPTOMS OF EXPOSURE Anesthetic effect may cause drowsiness, headache, dizziness, loss of coordination, nausea or loss of consciousness. Contact with evaporating liquid could cause frostbite or freezing of dermal tissue. Frostbite symptoms are a change in color of the skin to gray or white possibly followed by blistering.</p>
<p>TOXICOLOGICAL PROPERTIES Ethylene vapor will act as a simple asphyxiant by displacing the oxygen in the air. It is also a weak anesthetic but no other biological properties are known. The vapor will not irritate the eyes or mucous membranes. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.</p> <p>Ethylene is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.</p> <p>Persons in ill health where such illness would be aggravated by exposure to ethylene should not be allowed to work with or handle this product.</p>
<p>RECOMMENDED FIRST AID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ETHYLENE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.</p> <p><u>Inhalation:</u> Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Quick removal from the contaminated area is most important. The victim should be kept warm and quiet. Further treatment should be symptomatic and supportive.</p> <p>(Continued on Page 4)</p>

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.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Ethylene is flammable over a wide range in air. The flammable range in pure oxygen is 2.7 times broader than it is in air. It explodes spontaneously when mixed with chlorine in sunlight. Reacts vigorously with certain oxidizing agents.

PHYSICAL DATA

BOILING POINT -154.7°F (-103.7°C)	LIQUID DENSITY AT BOILING POINT 35.3 lb/ft ³ (566 kg/m ³)
VAPOR PRESSURE @ 70°F (21.1°C) = Above critical temperature	GAS DENSITY AT 70°F, 1 atm 0.0730 lb/ft ³ (1.169 kg/m ³)
SOLUBILITY IN WATER Negligible	FREEZING POINT -272.6°F (-169.2°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 70°F (21.1°C) = .97
APPEARANCE AND ODOR Colorless gas with a slightly sweet odor	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A (Gas)	AUTO IGNITION TEMPERATURE 968°F (520°C)	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LE 3.1 UEL 32
EXTINGUISHING MEDIA Carbon dioxide, dry chemical or water spray	ELECTRICAL CLASSIFICATION Group C - See NFPA No. 70	
SPECIAL FIRE FIGHTING PROCEDURES If possible, stop flow of gas supply and allow fuel to consume itself. Use water spray to cool surrounding containers.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Explodes spontaneously when mixed with chlorine in sunlight.		

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID Cylinder temperatures should not exceed 125F (52C).
Stable	X	
INCOMPATIBILITY (Materials to avoid) Chlorine, nitrogen dioxide, aluminum chloride, carbon tetrachloride		
HAZARDOUS DECOMPOSITION PRODUCTS None		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID High temperatures and pressures cause polymerization to polyethylene.
Will Not Occur	X	

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

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)		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 (Gen.) In accordance with electrical codes	OTHER	N/A
PROTECTIVE GLOVES Plastic or rubber			
EYE PROTECTION Safety goggles or glasses			
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain," face shield			

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Ethylene, compressed	DOT Hazard Class: Division 2.1
DOT Shipping Label: Flammable Gas	I.D. No.: UN1962
SPECIAL HANDLING RECOMMENDATIONS	
<p>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 connecting cylinder to lower pressure (<3,000 psig) piping or systems. 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.</p> <p>For additional handling recommendations, consult Compressed Gas Association's Pamphlets P-1, P-14, and Safety Bulletin SB-2.</p>	
SPECIAL STORAGE RECOMMENDATIONS	
<p>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 should 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 or use area. There should be no sources of ignition in the storage or use area.</p> <p>For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1, P-14, and Safety Bulletin SB-2.</p>	
SPECIAL PACKAGING RECOMMENDATIONS	
Ethylene is noncorrosive and may be used with any common structural material	
OTHER RECOMMENDATIONS OR PRECAUTIONS	
<p>Earth-ground and bond all lines and equipment associated with the ethylene 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).</p> <p>(Continued on Page 4)</p>	

*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.

HEALTH HAZARD DATATIME WEIGHTED AVERAGE EXPOSURE LIMIT: (Continued)

atmospheric pressure (pO₂>135 torr). OSHA 1993 PEL (8 Hr. TWA) = None listed.

RECOMMENDED FIRST AID TREATMENT: (Continued)

Skin Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has caused blistering of the skin or deep tissue freezing.

SPECIAL PRECAUTIONSOTHER 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.

Ethylene is considered a toxic chemical and is subject to the reporting requirements of SARA, Title III, Section 313.

NFPA 704 No. for ethylene = 1 4 2 None