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Material Safety Data Sheet: ACETYLENE

Product Name: Acetylene, dissolved	Chemical Family: Alkyne
Chemical Name: Acetylene	Identification Number: UN 1001
Synonyms: Ethyne, Welding Gas	Hazard Class: 2.1 (Flammable gas.)
Formula: C ₂ H ₂	PIN: 1001
COMPONENT CAS No. (BY WT.) OSHA - TWA ACGIH - STEL	

HEALTH HAZARD DATA

Inhalation: 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 explosive and an oxygen deficient atmosphere. Exposure in moderate concentrations may cause dizziness, headache, and unconsciousness. Lack of sufficient oxygen may cause serious injury or death.

Eye: None.

Skin: None.

Ingestion: None.

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

Medical Conditions Aggravated By Overexposure: None.

Carcinogenicity: Not listed in NTP, OSHA or IARC

FIRST AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

Eye: None.

Skin: None.

Ingestion: None.

Notes To Physician: None.

Hazardous Mixtures of other Liquids, Solids or Gases: None	
PHYSICAL DATA	
Boiling Point: -103.4°F (-75°C) @10 psig	Liquid Density at Boiling Point: 4.43 lb/ft ³ (70.96 kg/m ³)
Vapor Pressure: 635 psig, At 70°F (21.1°C)	Vapor Density: 0.07314 lb./cu ft (1.176 kg/CuM), At 32°F (0°C) @ 1 atm
Water Solubility: 1.7 Vol./Vol. At 32° F (0°C) at 1 atm	Freezing/Melting Point: -116°F (-82.2°C), at 10 psig
Evaporation Rate: N/A (Gas)	Specific Gravity: 0.906 At 70°F (21.1°C) @ 1 atm, Air = 1
Appearance and Odor: Colorless, Acetylene of 100% purity is odorless but commercial purity has a distinctive garlic-like odor. Odor Threshold: 565 ppm	

EMERGENCY OVERVIEW:

Danger: Flammable gas under pressure. Can form explosive mixtures with air. Cylinders contain fusible metal pressure relief devices in the top, bottom, or valve which melt at 208-220°F (98-104°C). Do not discharge cylinders at pressures above 15 psig (103 kPa).

FIRE FIGHTING MEASURES

Flash Point: Not applicable; Gas.

Auto ignition: 581°F (305°C) @ 1 atm

Flammable Limits - Lower: 2.5%

Flammable Limits - Upper: 80%

Extinguishing Media: Carbon Dioxide, Dry Chemical, Water.

Fire Fighting Instructions: DO NOT extinguish a gas fire unless effective immediate shut-off of gas flow is possible. Explosive vapor could form. 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.

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. Cylinders exposed to fire should not be moved until they have reached ambient temperature in the event internal decomposition is taking place.

Hazardous Combustion Products: Carbon Monoxide, Carbon dioxide.

Sensitivity To Static Discharge: Ignitable by static electricity.

Sensitivity To Mechanical Impact: Decomposition may occur.

ACCIDENTAL RELEASE MEASURES

Evacuate: If this material is released into a work area, evacuate the area immediately. Isolate hazard area. Eliminate any possible sources of ignition, 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. Never enter a confined space or other area where the concentration is greater than 10% of the lower flammable limit which is 0.25%.

HANDLING AND STORAGE

Storage: Store and use only in a well-ventilated area. Cylinders should be separated from oxygen and other oxidizers by a minimum of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire resistance rating of at least 1/2 hour. Storage in excess of 2,500 cu. Ft. is prohibited in buildings with other occupancies. Cylinders should be stored upright with a valve protection cap in place and firmly secured to prevent falling or being knocked over. Protect cylinders from physical damage; do not drag, roll, slide or drop. Use a suitable hand truck for cylinder movement. 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 and use areas. Storage areas must meet national electrical 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 long periods of time.

Handling: All acetylene piped systems and associated equipment must be grounded. Non-sparking tools should be used. 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 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 openings. Doing so may damage valve, causing a leak to occur. Do not strike cap with a hammer. 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.

Other Information.

When Used In Welding Or Cutting: Read and understand the manufacturer's instructions and the precautionary label on the products.

EXPOSURE CONTROLS - PERSONAL PROTECTION

Engineering Controls

Ventilation: Provide adequate natural or explosion-proof mechanical ventilation to ensure acetylene does not accumulate and reach its lower explosive limit of 2.5%

Personal Protective Equipment (PPE):

Skin Protection

Clothing: Cotton clothing is recommended for use to prevent static buildup.

IN CASE OF EMERGENCY, PLEASE CALL: 254 20 535082; 254 50 50536

Glasses: Safety glasses are recommended when handling cylinders.

Shoes: Safety shoes are recommended when handling cylinders.

Gloves: Work gloves are recommended when handling cylinders.

Respiratory Protection: Before entering area you must check for flammable and oxygen deficient atmospheres.

Respirator: None required in general use.

STABILITY AND REACTIVITY

Chemical Stability: Unstable. Stable as Shipped. Do not use at pressure above 15 psig (103 kPa).

Conditions To Avoid: Avoid mechanical shock.

Avoid high temperatures

Incompatibility With Other Materials: 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.

Hazardous Decomposition Products: Hydrogen, Carbon

Hazardous Polymerization: Will not occur

TOXICOLOGICAL INFORMATION

LCLo: 50% inhalation-man/5min

TCLo: (Anesthesia) 33% inhalation-man/7 min

Irritancy Of Material: None.

Sensitization To Material: None.

Reproductive Effects: None.

Teratogenicity: None.

Mutagenicity: None.

Synergistic Materials: None.

ECOLOGICAL INFORMATION

Ecotoxicity: 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).

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.

TRANSPORT INFORMATION

DOT/IMO Shipping Name: Acetylene, dissolved

Product RQ: None.

Shipping Label: Flammable Gas.

Special Shipping Information: Cylinders should be transported in a secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious hazards and should be discouraged.

Placard (When Required): Flammable gas.

USE OF THIS INFORMATION:

Carbacid Offers this information to customers, employees, contractors, and the general public to promote the safe use of this product through awareness of product hazards and safety information. Customers and others who use or transport or sell this product to others should: 1) Disseminate this information internally to all workplace areas, employees, agents and contractors likely to encounter this product; 2) Provide supplemental hazards awareness, safety information, operation and maintenance procedures to the workplace areas and employees, agents and contractors likely to encounter this product; 3) Furnish this information to all their customers who purchase this product; and 4) Ask each purchaser or user of the product to notify its employees and customers of the product hazards and safety information