

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Acetylene, dissolved
CHEMICAL NAME: Acetylene
CHEMICAL FAMILY: Alkyne
SYNONYMS: Ethyne, welding gas
CHEMICAL FORMULA: C₂H₂
USE: Welding, Cutting, instrument fuel

NAME AND ADDRESS: **Refrigeration & Oxygen Co.**
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2. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:**

DANGER: Flammable gas under pressure.
 Can form explosive mixtures with air.
 Cylinders have fusible metal pressure relief devices in the top, bottom, or valve that melts at 208 °F to 220 °F (98°C to 104°C).
 Do not discharge cylinders at pressures above 15 psig (103 kPa).
 Has a garlic-like odor in its industrial form.

POTENTIAL HEALTH EFFECTS INFORMATION:**ROUTES OF EXPOSURE:**

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 to moderate concentrations may cause dizziness, headache, and unconsciousness. Lack of sufficient oxygen may cause serious injury or death.

EYE CONTACT: None

SKIN CONTACT: None

SKIN ABSORPTION: None

INGESTION: None

CHRONIC EFFECTS: Acetylene is a nontoxic gas that has no chronic harmful effects even in high concentrations. Acetylene has been used as an anesthetic.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY: Acetylene is not listed by NTP, OSHA, or IARC.

POTENTIAL ENVIRONMENTAL EFFECTS: No adverse ecological effects are expected.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME ACETYLENE
PERCENTAGE >99%
CAS NUMBER 74-86-2

4. FIRST AID MEASURES

FIRST AID PROCEDURES:

INHALATION: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain prompt medical attention.

EYE CONTACT: Not applicable

SKIN CONTACT: Not applicable

INGESTION: Not applicable

NOTES TO PHYSICIAN: None

5. FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES: Can form explosive mixtures with air. Is unstable at pressures above 15 psig (103 kPa).

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Water protection of firefighters:

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: 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. If a flame is extinguished and acetylene continues to escape, an explosive re-ignition could occur. Internal decomposition can occur in cylinders exposed to fire. Hazardous combustion products include carbon monoxide and carbon dioxide.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS: Wear full firefighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Shut off source of acetylene if possible. Extinguish fire only if flow of acetylene can be stopped. Keep adjacent cylinders cool by spraying large amounts of water until the fire burns itself out and the cylinders are cool. Cylinders exposed to fire should not be moved until they have reached ambient temperature for at least 24 hours in the event internal decomposition is taking place.

SENSITIVITY TO STATIC DISCHARGE: Ignitable by static electricity

SENSITIVITY TO MECHANICAL IMPACT: Decomposition may occur

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Use personal protection recommended in Section 8. Before entering area you must check for flammable and oxygen-deficient atmospheres. Evacuate immediate area. Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation. 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 0.25%, which is 10% of the lower flammable limit.

ENVIRONMENTAL PRECAUTIONS: Not applicable.

METHODS FOR CONTAINMENT: Shut off source of acetylene, if possible. Isolate any leaking cylinder. Do not attempt to contain or capture leaking product in a secondary containment device.

METHODS FOR CLEAN-UP: Not applicable.

OTHER INFORMATION: None.

7. HANDLING AND STORAGE

ACGIH TLV: Simple asphyxiant

HANDLING: Use a suitable hand truck for cylinder movement. 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 cylinder 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 cap 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. For additional precautions in using acetylene see Section 16 - Other Information. When used in welding and cutting: Read and understand the manufacturer's instructions and the precautionary label on the products.

STORAGE: Store and use with adequate ventilation, Compressed gas cylinders shall be separated from materials and conditions that present exposure hazards to or from each other. Cylinders should be separated from oxygen and other oxidizers by a minimum distance of 20 ft or by a barrier of noncombustible material at least 5 ft high having a fire resistance rating of at least 1/2 hour. Storage in excess of 2,500 ft³ is prohibited in buildings with other occupancies. Cylinders should be stored upright with 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. 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 electric 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

OSHA PEL-TWA: None NIOSH IDLH: None

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:

EYE/FACE PROTECTION: Safety glasses are recommended when handling cylinders.

SKIN PROTECTION: Leather work gloves are recommended when handling cylinders. Safety shoes are recommended when handling cylinders. Cotton clothing is recommended for use to prevent static electric buildup.

RESPIRATORY PROTECTION:

General Use: None required

Emergency Use: Air supplied respirators are required in oxygen-deficient atmospheres (air purifying respirators will not function). Before entering area you must check for flammable and oxygen-deficient atmospheres.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Acetylene of 100% purity is odorless but commercial purity generated from calcium carbide has a distinctive garlic-like odor.

ODOR THRESHOLD: 565 ppm

PHYSICAL STATE: Gaseous pH: Not applicable

MELTING POINT: -116 DF (-82.2 DC) @ 10 psig (69 kPa):

BOILING POINT: -103.4 DF (-75 DC) @ 10 psig (69 kPa) FLASH POINT: Gas, not applicable

EVAPORATION RATE (Butyl Acetate = 1): Gas, not applicable

FLAMMABILITY: Flammable gas

FLAMMABLE LIMITS IN AIR BY VOLUME:

LOWER: 2.5% UPPER: 80%

VAPOR PRESSURE: 635 psig (kPa) @ 70 DF (21.1 DC)

GAS DENSITY: 0.07314 Lb/ft³ (1.1716 kg/m³) @ 32 DF (0 DC) and 1 atm SPECIFIC

GRAVITY (Air =1): 0.906 @ 70 DF (21.1 DC) and 1 atm

SOLUBILITY IN WATER: VolNol at 32 DF (0 DC) @ 1 atm: 1.7 VolNol at 60 DF (15.6 DC) @

1 atm: 1.1 COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

AUTOIGNITION: 581DF (305 DC) @ 1 atm

DECOMPOSITION TEMPERATURE: Not available

MOLECULAR WEIGHT: 26.04 EXPANSION RATIO: Not applicable

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Unstable. Stable as shipped.

Do not use at pressure above 15 psig (103 kPa).

CONDITIONS TO AVOID: Cylinders should not be exposed to sudden mechanical shock or sources of heat.

INCOMPATIBLE 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.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen, carbon

POSSIBILITY OF HAZARDOUS REACTIONS: 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.

11. TOXICOLOGICAL INFORMATION

Acetylene is a simple asphyxiant. **ACUTE DOSE EFFECTS:**

LD50: None; LC50: None

REPEATED DOSE EFFECTS: Acetylene is a nontoxic gas that has no chronic, harmful effects even in high concentrations. Acetylene has been used as an anesthetic.

IRRITATION: None

GENETIC EFFECTS: None

DEVELOPMENTAL EFFECTS: None

TERATOGENICITY: None

SYNERGISTIC MATERIALS: None

SENSITIZATION: None

REPRODUCTIVE EFFECTS: None

TARGET ORGAN EFFECTS: None

MUTAGENICITY: None

12. ECOLOGICAL INFORMATION

Product Information Number: 1001

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).

13. 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.

14. TRANSPORT INFORMATION

BASIC SHIPPING DESCRIPTION:

PROPER SHIPPING NAME: Acetylene, dissolved

HAZARD CLASS: 2.1 (Flammable gas)

IDENTIFICATION NUMBER: UN 1001

ADDITIONAL INFORMATION:

PRODUCT RQ: None

SHIPPING LABEL(s): Flammable gas PLACARD (when required): 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 safety hazards and should be discouraged.

15. REGULATORY INFORMATION & OTHER INFORMATION

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressures to be encountered. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow. Cross contamination of gases, liquids, or both can also create a hazardous condition inside a cylinder, de-war, or vessel (e.g., flammable and oxidizing gases can create an explosive mixture) which may result in rupture.

Shipment of compressed gas cylinders that have not been filled with the owners consent is a violation of federal law (49 CFR Part 173.301 b).

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties that can cause serious injury or death.

HAZARD RATINGS AND RATING SYSTEMS:

NFPA RATINGS:

HEALTH: =0; FLAMMABILITY: =4; INSTABILITY: =2; SPECIAL: None

STANDARD VALVE CONNECTIONS:

THREADED: CGA 510 standard for cylinders greater than 50.

PIN-INDEXED YOKE: Not applicable

ULTRA HIGH INTEGRITY: Not applicable

Use the proper connections; DO NOT USE ADAPTERS.

The information and recommendations in this Material Safety Data Sheet relate only to the specific material mentioned herein and do not relate to use otherwise ie., in combination with any other material or in any process.

The information and recommendations herein are taken from our extensive experiences and the data contained in recognized references and believed by us to be accurate. Refrigeration group of companies make no warranties either expressed or implied with

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