



ACETYLENE (Dissolved)

MATERIAL SAFETY DATA SHEET (MSDS Number – MGC A010011) Effective Date: August 2012

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Acetylene, dissolved
CHEMICAL NAME: Acetylene
CHEMICAL FAMILY: Alkyne
FORMULA: C₂H₂
SYNONYMS: Ethyne, welding gas
CAS No. : 74-86-2
[USE]: Welding, Cutting, instrument fuel

NAME AND ADDRESS:

Motukea Gas Company Limited,
Motukea Island, Porebada Road,
Port Moresby, PNG
Contact Telephone: (675) 321-0905

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME: ACETYLENE
PERCENTAGE: > 98%
OSHA PEL: None
ACGIH TLV: Simple Asphyxiant
[LD50]: None. **LC50:** None.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

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

Garlic-like odor.

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 non-toxic 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.

4. FIRST AID MEASURES

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

EYE CONTACT: Not applicable.

SKIN CONTACT: Not applicable.

INGESTION: Not applicable.

NOTES TO PHYSICIAN: None.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not applicable; gas. **AUTOIGNITION:** 581° F (305° C) @1 atm

FLAMMABLE LIMITS IN AIR BY VOLUME:

LOWER: 2.5%. **UPPER:** 80%.

EXTINGUISHING MEDIA:

Carbon Dioxide, Dry Chemical, Water.

SPECIAL FIRE FIGHTING INSTRUCTIONS: 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. If a flame is extinguished and acetylene continues to escape, an explosive re-ignition could occur.

UNUSUAL 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.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Evacuate immediate area. Eliminate any possible sources of ignition, and 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%.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation. Cylinders should be separated from oxygen and other oxidizers by a minimum distance 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 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 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.

PRECAUTIONS TO BE TAKEN IN 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 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, pry bar, screwdriver, 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. See American National Standard Institute (ANSI) Z49.1 *Safety in Welding and Cutting* published by the American Welding Society, P.O. Box 351040, Miami, Florida 33135 and National Fire Protection Association (NFPA) 51 *Oxygen Fuel Gas Welding and Cutting*.

8. 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%.

RESPIRATORY PROTECTION (SPECIFY TYPE):

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.

PROTECTIVE GLOVES: Work gloves are recommended when handling cylinders.

EYE PROTECTION: Safety glasses are recommended when handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders. Cotton clothing is recommended for use to prevent static electric buildup.

9. PHYSICAL AND CHEMICAL PROPERTIES

MOLECULAR WEIGHT: 26.04 g/mole

BOILING POINT (1 ATM):

-103.4°F (-75° C) @ 10 psig

SPECIFIC GRAVITY (Air =1):

At 70° F (21.1°C) and 1 atm: 0.906

FREEZING POINT/MELTING POINT:

At 10 psig: -116° F (-82.2° C)

VAPOR PRESSURE (AT 20° C):

At 70° F (21.1°C): 635 psig

GAS DENSITY: At 32°F (0°C) and 1 atm:

0.07314 lb./cu ft (1.176 kg/m³)

EVAPORATION RATE (Butyl Acetate=1): N/A (Gas)

SOLUBILITY IN WATER:

Vol./Vol. at 32° F (0° C) at 1 atm: 1.18

EXPANSION RATIO: Not applicable.

[pH]: Not applicable

APPEARANCE, ODOR AND STATE:

Colorless gas. Acetylene of 100% purity is odorless but commercial purity has a distinctive garlic-like odor.

[COEFFICIENT OF WATER/OIL DISTRIBUTION]:

Not available

[ODOR THRESHOLD]: 565 ppm

10. STABILITY AND REACTIVITY

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 shock or sources of heat.

INCOMPATIBILITY (Materials to Avoid): 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.

REACTIVITY:

A) HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen, carbon.

B) HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

Acetylene is a simple asphyxiant.

[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

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

Ecotoxicity effects

Aquatic toxicity : No data is available on the product itself.

Toxicity to other organisms : No data available.

Persistence and degradability

Mobility: No data available.

Bioaccumulation: No data is available on the product itself.

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

DOT/IMO SHIPPING NAME: Acetylene, dissolved

HAZARD CLASS: 2.1 (Flammable gas.)

IDENTIFICATION NUMBER: UN 1001

[PIN]: 1001

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

The following information concerns selected regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state [provincial], and local level.

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals. Requires facilities to

develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals as listed in Appendix A. Acetylene is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable gas on site in one location, in quantities of 10,000 pounds (4,553 kg) or greater is covered under this regulation unless it is used as fuel.

16. 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.

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 which can cause serious injury or death.

NFPA RATINGS: HMIS RATINGS:

HEALTH= 0

HEALTH: = 1

FLAMMABILITY= 4

FLAMMABILITY:= 4

REACTIVITY: = 3

REACTIVITY: = 3

SPECIAL:

None

CYLINDER INFORMATION / DIMENSIONS AND WEIGHTS

OUTSIDE DIAMETER: 258 mm

THICKNESS: 4 mm

ACETONE FILLING: Max 13.6 kg

ACETYLENE FILLING: Approx. 7kg

COLOUR: DARK RED/BROWN

BARE WEIGHT: 55 kg

VALVE: PFS-5

OUTLET THREAD: G 5/8-14-LH-INT

MARKING: MOTUKEA GAS C2H2

**[INFORMATION PREPARED BY]:
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Further information about acetylene can be found in the following pamphlets published by:
Compressed Gas Association Inc. (CGA),
1725 Jefferson Davis Highway, Suite 1004, Arlington,
VA 22202-4102. Telephone: (703) 412-0900.
G-1.1 Commodity Specification for Acetylene
G-1 Acetylene
P-1 Safe Handling of Compressed Gases in Containers
SB-4 Handling Acetylene Cylinders in Fire Situations
SB-8 Use of Oxy-fuel Gas Welding and Cutting Apparatus

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