



SECTION 1: Identification

Product Identifier

Product Form:	Substance
Trade Name:	Acetylene
Chemical Name:	Acetylene
CAS No.:	74-86-2
Formula:	C ₂ H ₂
Chemical Family:	Alkyne
Other Means of Identification:	Ethyne, Welding Gas

Recommended Use of Substance or Mixture and Uses Advised Against

Use:	Welding, instrument fuel; Use as Directed
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Details of Supplier

International Industrial Gases Ltd.
146 Andul Road, Howrah 711103, West Bengal, India 146
Phone: +91 (033) 26684724
www.iigas.com

SECTION 2: Hazard Identification

Classification of Substance or Mixture

ACGIH – STEL:	Simple Asphyxiant
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Emergency Overview

- 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).
- Garlic-like odor.

Potential Health Effects Information

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.
Carcinogenicity:	Not listed in NTP, OSHA or IARC

SECTION 3: Composition/Information on Ingredients

For Substances

Product Name:	Acetylene, Dissolved
CAS No.:	74-86-2
Percent (by weight):	99.0% 100.0%
NFPA Fire:	4
NFPA Health:	0
NFPA Reactivity:	3
NFPA Special Hazard:	
HMIS Fire:	4
HMIS Health:	1
HMIS Reactivity:	3
Mixture:	No
Acute:	No
Chronic:	No
Fire:	Yes
Reactive:	Yes
Sudden Release Pressure:	Yes

For Mixtures

Not Applicable

SECTION 4: First Aid Measures

Description of First Aid Measures

After inhalation:	Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
After Eye-Contact:	Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all



surfaces are flushed thoroughly. Contact an ophthalmologist immediately. Get immediate medical attention.

After Skin Contact:

The liquid may cause frostbite. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

After Ingestion:

Ingestion is not considered a potential route of exposure.

SECTION 5: 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.
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.
Combustion Products:	Carbon Monoxide, Carbon dioxide.
Sensitivity To Static Discharge:	Ignitable by static electricity.
Sensitivity To Mechanical Impact:	Decomposition may occur.

SECTION 6: 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%.

SECTION 7: 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. For additional precautions in using acetylene see Section 16 – Other Information.



When Used In Welding Or 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.

SECTION 8: Exposure Control – 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) and Skin Protection

Clothing:	Cotton clothing is recommended for use to prevent static buildup.
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. Wear a NIOSH/MSHA-approved (or equivalent) full-face piece airline respirator in the positive pressure mode in oxygen deficient atmospheres (air purifying respirators will not function).

SECTION 9: Physical and Chemical Properties

Physical State:	Gas
Color:	Colorless gas.
Odor:	Acetylene of 100% purity is odorless but commercial purity has a distinctive garlic-like odor.
Molecular Weight:	26.04
Boiling Point:-	103.4°F (-75°C) @10 psig
Specific Gravity:	0.906 At 70°F (21.1°C) @ 1 atm, Air = 1
Freezing/Melting Point:	-116°F (-82.2°C), at 10 psig
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
Expansion Ratio:	Not Applicable – Gas
pH:	Not Applicable – Gas
Odor Threshold:	565 ppm



Evaporation Rate: Not Applicable – Gas
Coefficient Of Water/Oil
Distribution: Information not available

SECTION 10 - 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

SECTION 11: Toxicological Information of acetylene

LCLo: 5 0% 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.

SECTION 12: 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).



SECTION 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.

SECTION 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: 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.