Ellenbarrie Industrial Gases Limited Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Dissolved Acetylene
Trade Name: Dissolved Acetylene
Product Use: Metal industry: flame cutting of metals.
Chemical Name: Dissolved Acetylene
Synonym: Ethyne, Acetylene, Ethine.
Chemical Formula: C_2H_2
Chemical Family: Flammable Gas
Telephone: **Emergencies:** * 033-25828791
*033-27094398
*08924-205105
Supplier /Manufacture: Ellenbarrie Industrial Gases Limited.
3A Ripon Street, Kolkata-700016
Phone: 033-22292441, 22291923, 22491922
Fax: 033-22493396

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Ellenbarrie Industrial Gases Limited sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD_{50} (Species & Routes)	LC_{50} (Rat, 4 hrs.)	TLV (ACGIH)
Dissolved Acetylene	95.0 to 97.0	74-86-2	Not applicable.	Not available.	Simple asphyxiant.
Acetone	Not Available	67-64-1	Not applicable	Not available	500 ppm TWA, 750 ppm (STEL)

3. Hazards Identification

Emergency Overview

CAUTION! Flammable, colorless gas with slight garlic odour. Dangerous fire and explosion hazard. Avoid heat, sparks and flame. Simple Asphyxiant. This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain Oxygen levels above 19.5%. May cause anesthetic effects. Highly flammable under pressure. Spontaneously combustible in air at pressures above 15 psig. Acetylene liquid is shock sensitive. Contents under pressure. Use and store below 52°C.

ROUTES OF EXPOSURE: Inhalation. Skin contact. Eye contact.

THRESHOLD LIMIT VALUE: TLV-TWA Data from 2004 Guide to Occupational Exposure Values (ACGIH).

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Acetylene is an asphyxiant and may cause anesthetic effects at high concentrations. High concentrations may exclude an adequate supply of oxygen to the lungs. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.

Under normal operating conditions, acetone is not released from the cylinder. However, if the cylinder is overcharged with acetone or acetylene, acetone may occasionally "spit" out. Acetone is primarily an irritant and CNS depressant. High concentrations may have central nervous system effects causing headache, nausea, dizziness, vomiting and fatigue.

SKIN CONTACT: Skin effects are not likely. Contact with liquid acetylene may cause irritation and dermatitis upon repeated exposures.

INGESTION EFFECTS: Ingestion is unlikely, since acetylene is a gas at room temperature.

EYE CONTACT: None known since product is a gas at room temperature. Contact of liquid acetylene with the eyes may cause temporary irritation.

POTENTIAL ENVIRONMENTAL EFFECTS: Not expected to be toxic to fish and wildlife.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: May aggravate pre-existing skin disorders

CARCINOGENICITY: Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive. Keep victim warm and quiet.

SKIN CONTACT:
Contaminated clothing presents a fire hazard and should be immediately removed. Wash affected areas with soap and warm water. If irritation develops, seek medical attention.

INGESTION:
None normally required.

EYE CONTACT:
None normally required. Consult a physician if direct contact with pressurized material occurs. Immediately flush with low pressure, cool water for at least 15 minutes, opening eyelids to ensure flushing. Get medical attention.

NOTES TO PHYSICIAN: *Aspirated acetone may cause severe lung damage. If a large quantity of material has been swallowed, stomach contents should be evacuated quickly in a manner that avoids aspiration. Otherwise, there is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.*

5. Fire Fighting Measures

FLAMMABLE: Flammable. **IF YES, UNDER WHAT CONDITIONS?** See Unusual fire and explosion hazards

FLASH POINT (test method) -17.8°C. **AUTOIGNITION TEMPERATURE** 305°C(581°F).

FLAMMABLE LIMITS IN AIR, % by volume: **LOWER:** 2.5%. **UPPER:** 100%.

EXTINGUISHING MEDIA:
Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:
CAUTION! Flammable gas under pressure. ALWAYS EXTINGUISH A FIRE BEFORE CLOSING THE CYLINDER VALVE. *If the flame is small from the fusible plug or valve stem, try to put it out.* Use non-sparking tools to close container valves. Firefighters should wear respiratory protection (SCBA) and full turnout. If the fire is allowed to keep burning it is likely that the fusible plug will melt and result in a large release of acetylene. A glove or heavy cloth or any wet material slapped on the flame will frequently extinguish it. *If the flame is large, burning from a fusible plug,* ***DO NOT*** *try to put it out unless the cylinder is outdoors or in a very well ventilated area free from sources of ignition.* Usually it is very difficult to extinguish large fires because the escaping acetylene may be reignited by adjacent ignition sources, thereby possibly creating a confined space explosion. Keep containers cool with water spray. Continue to cool fire-exposed cylinders well after flames are extinguished. Cylinders should not be moved until they have reached ambient temperature in case internal decomposition is taking place. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 gallons per minute water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions. Continue to cool fire-exposed cylinders until well after flames are extinguished.

UNUSUAL FIRE AND EXPLOSION HAZARD:
Fire will produce carbon monoxide and carbon dioxide. Pure acetylene can ignite by decomposition above 15 psig; therefore, the UEL is 100% if the ignition source is of sufficient intensity. Pure acetylene is shock sensitive. Cylinder may vent rapidly or rupture violently from pressure when involved in a fire situation. GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURE ABOVE 15 PSI (207 kPa). It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily reignite with possible explosive force. Acetylene has a density very similar to that of air so when leaking it does not readily dissipate. Gas may travel to a source of ignition and flash back. Fires involving acetylene occur occasionally at fusible metal pressure relief plugs at the tops and bottoms of cylinders, commonly due to hot metal or slag being dropped on the fusible plugs. When the fusible plug releases a large volume of acetylene will rush out, creating a "roaring" sound. The flame may extend a foot or two away from the cylinder until the pressure is reduced. In some cases, the other end of the cylinder may develop a coating of frost.

HAZARDOUS COMBUSTION PRODUCTS: Carbon Monoxide, Carbon Dioxide

SENSITIVITY TO IMPACT: May decompose.

SENSITIVITY TO STATIC DISCHARGE: May ignite.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CAUTION! Flammable gas under pressure. Extinguish all ignition sources. No smoking, flames, flares, or sparks in hazard area. Evacuate all personnel from affected areas and provide maximum explosion-proof ventilation. Never enter a confined space or other area where the concentration is greater than 10% of the LEL (0.23%). Check with appropriate device. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs.

If possible to do safely, shut off ignition sources and stop the leak by closing the valve. For small leaks, cylinders may be moved to an area outdoors and away from any source of ignition. Circumstances where, it is advisable to attempt removal of the cylinder are when cylinders are in close proximity to other compressed gases, when highly flammable materials or hazardous materials are in the vicinity of the acetylene cylinder(s), or where protection of the building is unusually difficult and spreading of a fire may produce a major loss of life or property. **DO NOT ATTEMPT TO REMOVE CYLINDERS THAT HAVE BEEN EXPOSED TO HEAT.** All personnel in close vicinity of a cylinder exposed to heat must be evacuated immediately. Cylinders exposed to heat or fire must not be disturbed, it may be hosed down with water from a safe distance to keep it cool. This process must continue till such time the cylinder stops steaming or when water on the body of the cylinder does not dry up quickly when the water is stopped.

WASTE DISPOSAL METHOD:

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Ellenbarrie Industrial Gases Limited or authorized distributor for proper disposal. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Outside or detached storage is preferred. Post "NO SMOKING OR OPEN FLAMES" signs in the storage area or use area. DO NOT allow the temperature where cylinders are stored to exceed 52^{o}C. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. There should be no source for accidental ignition in the storage or use area. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Acetylene gas contained in cylinders in dissolved state when the total quantity of such cylinder exceeds 50 at a time is prohibited without a license. Store and use with adequate ventilation. Separate Acetylene cylinders from Oxygen and other oxidizers by at least 20 ft (6.1m), or use a barricade of noncombustible material. This barricade should be at least 1 ft above the tip of the cylinder valve and have a fire resistance rating of at least ½ hour. Post “No Smoking or Open Flames” signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas.

PRECAUTIONS TO BE TAKEN IN HANDLING:

All acetylene piped systems and associated equipment must be grounded (Electrical Classification: Follow IS 2148). Never use copper piping for acetylene service. Only steel or wrought iron pipe should be used. Open cylinder valve minimum amount required (no more than 1-1.5 turns) to deliver acceptable flow to enable the cylinder to be closed quickly in an emergency situation. Never leak check with an open flame. Use only in well-ventilated areas. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest Ellenbarrie location immediately for assistance. IT IS CRUCIAL THAT FUSE PLUGS IN THE TOPS AND BOTTOMS OF ALL ACETYLENE CYLINDERS BE THOROUGHLY INSPECTED WHENEVER HANDLED. REMOVE AND QUARANTINE IN A SAFE LOCATION ANY DEFECTIVE CYLINDER. Keep away from heat, sparks, and open flame. Use only spark-proof tools and explosion-proof equipment. Never use acetylene at pressures exceeding 15 psig (103.5 kPa). Can cause rapid suffocation due to oxygen deficiency. Close valve after each use; keep closed even when empty. Arcs and sparks can ignite combustible materials. Prevent fires.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Flammable gas under pressure. Use piping and equipment adequately designed to withstand pressures. Acetylene systems should be installed only by persons with knowledge of the unique properties of acetylene and trained and experienced in such installation. All piped acetylene systems and associated equipment must be grounded. Electrical equipment must be non-sparking or explosion-proof. Leak check with soapy water. Use a backflow prevention device in any piping. Copper, silver, and mercury and their salts, compounds, and high-concentration alloys can form explosive compounds with acetylene. Brass containing less than 65 percent copper and certain nickel alloys is generally acceptable for use in acetylene service but may not be adequate if high corrosion or excess moisture is present. Never work on a pressurized system. If there is a leak, close the cylinder valve. Blow down the system in an environmentally safe manner in compliance with all federal, state, and local laws; then repair the leak. Never place a compressed gas cylinder where it may become part of an electrical circuit.

Never insert an object (i.e. screwdriver, etc.) into valve cap openings as this can damage the valve causing leakage.

Never attempt to repair or alter cylinders. Never tamper with pressure relief devices or fusible plugs. Under no circumstances allow a torch flame to contact the fusible plug.

Do not store cylinders on their side. This makes the acetylene less stable and less safe, and increases the likelihood of solvent loss and resultant decomposition.

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS

LOCAL EXHAUST: Use local exhaust and general ventilation systems to prevent build up of flammable concentrations.

MECHANICAL (general): Small quantities can be handled in forced ventilation hoods. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for details.

SPECIAL: Not applicable.

OTHER: Not applicable.

PERSONAL PROTECTION

RESPIRATORY PROTECTION: For emergency release use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using at a minimum Grade D air.

SKIN PROTECTION: Protective gloves as necessary for the job. Gloves with thermal protection should be used for welding.

EYE PROTECTION: Safety goggles or glasses as appropriate for the job.

OTHER PROTECTIVE EQUIPMENT: Safety shoes. Cotton clothing is recommended to prevent static build-up.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas@ NTP

MELTING POINT: -82.2°C (-116°F) @ 10psig

pH: Not applicable

BOILING POINT: -75.2°C (-103.4°F) @ 10psig

VAPOUR PRESSURE: 649.6 psig (@ 70 °F; 21.1 °C)

MOLECULAR WEIGHT: 26.04 g/mole

SUBLIMATION POINT: -83.3°C (118°F) @ 1 atm

FLASH POINT: 0°F (-17.8°C)

SOLUBILITY IN WATER: 1.7 v/v at 0°C

SPECIFIC GRAVITY: 0.906

EVAPORATION RATE: NA

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.

VAPOUR (Air = 1)

(Butyl Acetate=1):

AUTO IGNITION TEMPERATURE: 305°C (581°F) @ 1atm

DECOMPOSITION TEMPERATURE: Not available

VAPOUR DENSITY: 1.1716 kg/m^3 @ 0°C and 1 atm.

% VOLATILES BY VOLUME: 100% (v/v).

ODOUR THRESHOLD: Not available

APPEARANCE & ODOUR:

Colorless; faint ethereal odor when pure. Commercial (carbide) acetylene has a distinctive garlic-like odor.

10. Stability and Reactivity

STABILITY: The product is unstable.

CONDITIONS OF CHEMICAL INSTABILITY: Avoid elevated temperatures, elevated pressure and / or presence of a catalyst.

INCOMPATIBILITY (materials to avoid): Copper, silver, mercury, or their alloys; oxidizing agents; acids; halogens; moisture.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition or burning may produce CO/CO_2H_2. The welding and cutting process may form reaction products such as CO and CO_2. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.

CONDITIONS OF REACTIVITY: Fire or explosion may result from use at elevated temperatures and pressures or from use with incompatible materials.

11. Toxicological Information

ACUTE DOSE EFFECTS: No known effects from acetylene gas..

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. Not toxic. Will not bioconcentrate.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return container to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Acetylene, Dissolved

HAZARD CLASS: CLASS 2:1
Flammable gas.

IDENTIFICATION #: UN1001

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. Cylinders transported in an enclosed, non ventilated compartment of vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

WHMIS (Canada) CLASS A: Compressed gas

International Regulations

EINECS 200-816-9

Toxic Substances Control Act Acetylene is listed on the TSCA inventory

16. Other Information

MIXTURES:

When you mix two or more chemicals, you can 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 evaluate the end product. Chemicals have properties that can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:		**NFPA RATINGS:**	
HEALTH	**2**	HEALTH	**0**
FLAMMABILITY	**4**	FLAMMABILITY	**4**
PHYSICAL HAZARD	**2**	PHYSICAL HAZARD	**2**

CONNECTIONS: **DO NOT USE ADAPTERS.**

ADDITIONAL SAFETY AND HEALTH HAZARDS:

Using this product in welding and cutting may create additional hazards.

FUMES AND GASES can be dangerous to your health and may cause serious lung disease.

Keep your head out of fumes. Do not breathe fumes and gases. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes or may cause other similar discomfort.

Fumes and gases cannot be classified simply. The amount and type depend on the metal being worked and the process, procedure, equipment, and supplies used. Possible dangerous materials may be found in fluxes, electrodes, and other materials. Get an MSDS for every material you use.

Contaminants in the air may add to the hazard of fumes and gases. One such contaminant, chlorinated hydrocarbon vapors from cleaning and degreasing activities, poses a special risk.

To find the quantity and content of fumes and gases, you can take air samples. By analyzing these samples, you can find out what respiratory protection you need. One recommended sampling method is to take air from inside the worker's helmet or from the worker's breathing zone.

NOTES TO PHYSICIAN:

Acute: *Gases, fumes, and dusts may cause irritation to the eyes, lungs, nose, and throat. Some toxic gases associated with welding and related processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty breathing, frequent coughing, or chest pains.*

Chronic: *Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition that may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work-related factors such as smoking, etc.*

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