LES GAZ INDUSTRIELS LTD.
UNE VALEUR SÛRE
Est. 1952

MATERIAL SAFETY DATA SHEET

ACETYLENE

DATE: May 2008

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name	ACETYLENE
Chemical Formula	C_2H_2
Trade Names	Acetylene Dissolved Acetylene Lighthouse Grade Acetylene Instrument Grade Acetylene
Colour Coding	All the above cylinders have Maroon (A.01) bodies. The Lighthouse & Instrument grades have the relevant stencilling, or decals on the bodies of the cylinders.
Valve	All of the above grades have the 3 SA–Brass 5/8 inch left hand female valves fitted.
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2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Acetylene
Chemical Family	Unsaturated Hydrocarbons
Synonyms	Dissolved Acetylene (DA)
CAS No.	74-86-2
UN No.	1001
ERG No.	116
Hazchem Warning	2 A flammable gas

3 HAZARDS IDENTIFICATION

Main Hazards. All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. Acetylene is highly flammable, and is lighter than air. It burns in air with an intensely hot, luminous and smoky flame. The flammability limits in air are between 2,5 - 82% by volume, and flammable explosive gas-air mixtures may be formed. Acetylene is dissolved in acetone under pressure in steel cylinders. Cylinders should never be exposed to excessive temperatures as this may cause rupturing of the cylinders with escape of the gas.

Adverse health effects. The gas is simple asphyxiant and high concentrations could cause narcosis. A 20% concentration could cause dyspnea and headaches. A 40% concentration or more may cause collapse.

Chemical Hazards. Never use free Acetylene at pressures above 150 kPa, as the gas may decompose with explosive force under certain conditions. Under certain conditions Acetylene forms readily explosive acetylide compounds when in contact with copper, silver or mercury. Acetylene should not be used with these metals, their salts, compounds or high concentration alloys.

Biological Hazards.	No known effect
Vapour Inhalation.	Acetylene is a simple asphyxiant, high concentrations could cause narcosis.
Eye Contact	No known effect
Skin Contact	No known effect
Ingestion	No known effect

4 FIRST AID MEASURES

As the gas is a simple asphyxiant, keep the patient warm and immediately administer oxygen. Apply artificial respiration only if the patient is not breathing, but do **NOT** use mouth-to-mouth resuscitation. Persons who have inhaled the fumes produced in a fire, or chemical reaction, may not show immediate symptoms. They must lie down and keep quite still, and be taken for medical attention. The patient should be kept under medical observation for at least 48 hours. Treatment should be symptomatic and supportive.

5 FIRE FIGHTING MEASURES

Extinguishing media. Dry powder. Carbon Dioxide. Fog-water spray. (In the absence of fog equipment a fine spray of water may be used).

Specific hazards. Highly flammable. Temperatures in a fire may cause the activation of the pressure-relief devices, and/or the rupture of the cylinder, which would add fuel to the fire. The unignited gas can act as a simple asphyxiant, and could form highly explosive gas/air mixtures.

Emergency actions. Acetylene leak – leak not ignited – cylinder not hot. Extinguish all sources of ignition in the immediate area. Close the cylinder valve. If necessary tighten the gland nut. If leak continues, evacuate the area, and avoiding sources of ignition and minimising personal risk move the leaking cylinder to a safe outside area. Post warning notices and prevent access to the area. Do not attempt to tighten the cylinder valve in the body of the cylinder. Do not tamper with the safety devices.

Hot cylinder or Acetylene leak ignited. Raise fire alarm. Close cylinder valve if safe to do so, and use relevant extinguisher. If not possible, allow small fires to remain burning if they are not posing a hazard. This will prevent the pressure from building up in the cylinders. **Call fire brigade.** Remove all cylinders from the path of the fire. Cool cylinders exposed to the fire by applying water from a safe location. Evacuate the area. Do **NOT** attempt to move the cylinders until they have been cold for one (1) hour. Check by stopping the cooling water and noting whether the cylinders surfaces dry rapidly or not. Continue the cooling until the cylinders surfaces remain wet without any dry patches forming quickly. Check with a bare hand that cylinders remain cool for at least sixty(60) minutes. Should any cylinders be found to be warm, reapply cooling water, and check as before. Once all the effected cylinders have remaind cool for at least sixty (60) minutes, immerse in a cold water-bath for a further twelve (12) hours. This will prevent the spontaneous re-ignition

Protective clothing. Exposed fire-fighters should wear approved self-contained breathing apparatus with full-face masks.

Environmental precautions. As the gas is lighter than air., ensure that it is not trapped in confined spaces. This could lead to the formation of a highly explosive gas-air mixture. Ventilate all confined spaces using forced-draught if necessary. Ensure that all electrically powered equipment is flameproof.
CONTACT THE NEAREST AFROX BRANCH.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions. As Acetylene is a simple asphyxiant, care should be taken when entering confined spaces where leaks have occurred. DO NOT enter any potentially hazardous area with any source of ignition such as a lit cigarette, or match.

Environmental precautions. Acetylene does not pose a hazard to the environment. An explosive gas-air mixture could be formed when leaks occur, so eliminate all forms of ignition.

Small spills. Small leaks should be extinguished by shutting off the source of supply, e.g. closing the valve on the cylinder, or tightening the gland nut where appropriate. If unable to stop small leaks, the cylinder should be moved into the open well away from any source of ignition. Should a small leak have ignited, use a multi-purpose dry powder or carbon dioxide extinguisher. Should there be no extinguisher available, a welders glove or heavy cloth, soaked in water may be used to extinguish the flame.

Large spills. Stop the source if it can be done without risk. Eliminate all sources of ignition and static discharges. Restrict access to the area until completion of the clean-up procedure. Post relevant warning signs. Wear adequate protective clothing when working near the source of the leak. Ventilate the area using forced draught if necessary. Ensure that all equipment is flameproof.

7 HANDLING AND STORAGE

Cylinders should always be transported in the upright position, with the valve uppermost, and be firmly secured. Do NOT store Acetylene and oxygen cylinders in close proximity to each other. Storage in the same room or space is prohibited with following classes: Explosives; Oxidising agents; Radioactive agents; Organic peroxides; Spontaneously combustible material. Conspicuous signs should be posted in the storage area forbidding smoking, or the use of naked lights. Use the "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Compliance with all relevant legislation is essential. Keep away from children. If a cylinder has been stored horizontally, stand it upright for at least 30 minutes before use to prevent acetone carryover.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure hazards. No known effect.

Engineering control measures. Engineering control measures are preferred to reduce exposures. General methods include mechanical ventilation, process or personal enclosure, and control of process conditions. Administrative controls and personal protective equipment may also be required. Use a suitable flameproof ventilation system separate from other exhaust ventilation systems. Exhaust direct to outside supply sufficient replacement air to make up for air removed by exhaust system.

Personal protection. Use self-contained breathing apparatus when fighting large fires.

Eyes Use safety glasses when working with cylinders.

Hands Use suitable protective gloves when working with cylinders.

Feet Wear protective footwear when working with cylinders.

Skin No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	C_2H_2
Molecular Weight	26,038
Specific Volume @ 20°C & 101,325 kPa	918,0 ml/g
Density, gas @ 101,325 kPa and 20°C	1,0904 kg/m^3
Auto ignition temperature	305°C
Relative density (Air=1) @ 101,325 kPa	0,906
Flammability limits in air (by volume)	2,5 - 82%
Colour	None
Taste	None
Odour	Ethereal when pure. Garlic when commercial

10 STABILITY AND REACTIVITY

Conditions to avoid. Overheating of cylinders. Never, under any circumstances, attempt the transfer of Acetylene from one cylinder to another, or try to refill cylinders, or mix any other gas with Acetylene in a cylinder. Never tamper with pressure relief devices in valves or cylinders. Keep sparks and flames away from cylinder, and under no circumstances allow a torch flame to come into contact with any part of the cylinder. Never test for leaks with a flame. Use soapy water when testing for leaks. Never use Acetylene cylinders in a horizontal position. Never use cylinders as rollers or supports, or for any purposes other than the storing of Acetylene.

Incompatible materials. See section on chemical hazards.

Hazardous decomposition products. Acetylene in its free state under pressure may decompose violently. The higher the pressure, the smaller the energy needed to cause an explosion. Never use free gas outside of the cylinder at pressures exceeding 150 kPa. Should the cylinder contents be burning internally, as indicated by a hot cylinder surface, this could lead to a build-up of pressure, resulting in the cylinder bursting. Treat as for hot cylinder in Section 5 FIRE FIGHTING MEASURES. NOTIFY THE NEAREST AFROX BRANCH.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	No known effect
Skin & eye contact	No known effect
Chronic Toxicity	TLV 750 VPM
Carcinogenicity	No known effect
Mutagenicity	No known effect
Reproductive Hazards	No known effect

12 ECOLOGICAL INFORMATION

As Acetylene is lighter than air it will disperse rapidly in open areas. It does not pose a hazard to the ecology.

13 DISPOSAL CONSIDERATIONS

Disposal Methods. Small amounts may be blown to the atmosphere under controlled conditions. No sources of ignition should be in the vicinity. Large amounts should only be handled by the gas supplier.

Disposal of packaging. The disposal of containers must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No.	1001
Class	
Danger group	
Subsidiary risk	Asphyxiant
ERG No.	116
Hazchem warning	2A

SEA TRANSPORTATION

IMDG	1001
Class	
Packaging group	
Label	Flammable gas

AIR TRANSPORTATION

ICAO/IATA Code	1001
Class	2.1
Subsidiary risk	Flammable gas
Packaging group	
Packaging instructions	
- Cargo	Forbidden
- Passenger	Forbidden
Maximum quantity allowed	
- Cargo	Forbidden
- Passenger	Forbidden

15 REGULATORY INFORMATION

EEC Hazard class	Flammable gas.
Risk phrases	R2 Risk of explosion by shock, friction, fire or other sources of ignition R11 Highly flammable R44 Risk of explosion if heated under confinement
Safety phrases	S2 Keep out of reach of children S15 Keep away from heat S16 Keep away from sources of ignition S33.Take precautionary measures against static discharges S37 Wear suitable gloves S39 Wear eye / face protection S51 Use only in well-ventilated areas
National legislation	none

Refer to SANS 10265 for explanation of the above.

16 OTHER INFORMATION

Bibliography

Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases - 3rd Edition
Matheson. Matheson Gas Data Book - 6th Edition
SANS 10265 - Labelling of Dangerous Substances

17 EXCLUSION OF LIABILITY

Information contained in this publication is accurate at the date of publication. The company does not accept liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.

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