



## MATERIAL SAFETY DATA SHEET (MSDS)

## ACETYLENE

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DATE: Nov 2018

Version 5

Ref. No.: MS056

**1 PRODUCT AND COMPANY IDENTIFICATION**

<b>Product Name</b>	Acetylene
<b>Chemical Formula</b>	C <sub>2</sub> H <sub>2</sub>
<b>Trade Names</b>	Ecetylene Acetylene Disolved acetylene-DA Portapak acetylene Econo pak acetylene Agrigas acetylene Instrumentation grade acetylene
<b>Colour coding</b>	Acetylene cylinders have maroon (A01) Acetylene cylinder may have different valve guard colours depending on gas grade-green, orange, blue. Some grades have grade stencilled along the body in white letters. Decals attached to cylinder also provide information on grade.
<b>Valve</b>	All large acetylene cylinders have a brass cylinder valve with a 5/8 inch BSP female left hand outlet thread. Only the small portapak acetylene cylinder has an 11/16 inch left hand female thread.
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**EMERGENCY NUMBER****2 COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Chemical Name</b>	Acetylene
<b>Chemical Family</b>	Unsaturated Hydrocarbon
<b>Synonyms</b>	Dissolved Acetylene (DA)
<b>CAS No.</b>	74-86-2
<b>UN No.</b>	1001
<b>ERG No.</b>	116
<b>Hazard Warning</b>	2A Flammable Gas

**3 HAZARDS IDENTIFICATION****Main Hazards**

Acetylene is extremely flammable and slightly lighter than air. Acetylene ignites easily and burn with an extremely hot bright flame giving off black smoke. Flammability limits in air, are between 2.5 and 82% by volume. Highly explosive mixtures can be formed in air in this range. Acetylene is dissolved in acetone under pressure in a steel cylinder. Cylinders are filled with a porous substance to distribute the acetylene throughout the cylinder volume. Cylinders are transportable gas container. Cylinders must never be exposed to heat or any source of ignition as this may cause cylinder to rupture and explosion may occur due to the gas involve.

**Adverse Health Effects**

Acetylene gas can act as a simple asphyxiate, it may decrease concentration of oxygen in air below level to support life. High concentration may cause narcosis. 20% concentration may cause dyspnoea & headache. 40% concentration/more may cause collapse.

**Chemical Hazards**

Never use free acetylene at pressure above 150Kpa as gas may decompose with explosive force under certain conditions. Acetylene may form readily explosive acetylene compounds when it comes in contact with copper, silver, mercury. Acetylene should not be used with the metals, their salts, compounds or highly concentrated alloys.

**Vapour Inhalation**

Acetylene is an asphyxiate - high concentration may cause narcosis.

**Label Elements****Hazard Pictograms****Dissolved gas****Warning****Contains  
gas under  
pressure; may  
explode if heated****Precautionary Statements**

- P210: Keep away from heat/sparks/open flames/hot surfaces – no smoking
- P377: Leaking gas fire: Do not extinguish unless leak can be stopped safely
- P381: Eliminate all ignition sources if safe to do so
- P410+P403: Protect from sunlight and store in a well-ventilated place.

**4 FIRST AID MEASURES****Eye/Skin Contact** Unknown effect**Ingestion** Unknown effect

Acetylene act as a simple asphyxiant, by reducing oxygen concentration in air below a level where it can support life, Person expose to such condition should be taken to an uncontaminated area, keep patient should be keep warm. Apply artificial respiration only if the patient is not breathing, refrain using mouth to mouth resuscitation. Person who has inhaled the fumes produced in a fire or during chemical reaction may not show any symptoms immediately. Person who has been expose the fumes should be encouraged recline down and keep still. Prompt medical attention is mandatory to such person. The person should be kept under medical observation for at least 48hours. Give the patient treatment if symptoms show.

**5 FIRE FIGHTING MEASURES****Extinguishing Media**

Use dry powder or fog-water spray to extinguish acetylene flame. In the absence of fog equipment a fine spray of water may be used.

**Specific Hazards**

Acetylene is highly flammable. Cylinder in naked fire may cause the activation of the pressure-relief devices, and/or the unpredictable violent rupture of the cylinder, which will add a large quantity of fuel to the fire. Cylinder must be cool with large quantity of water at a safe distance. An un-ignited gas cloud will form a highly flammable or explosive mixture in air, and all sources of ignition must be eliminated. A gas cloud may also act as a simple asphyxiate.

**Emergency Actions**

**Acetylene leak, leak not ignited, cylinder not hot. Eliminate all sources of ignition in the area.** Close the cylinder valve. If necessary tighten the gland nut. If leak continues, evacuate the area and minimizing personal risk by moving the leaking cylinder to a safe well ventilated area. Post warning notices and prevent access to the area. Do not tamper with the safety devices. **Hot cylinder or Acetylene leak ignited. Raise fire alarm.** Close cylinder valve if it is safe to do so, and use appropriate fire extinguisher to put off flame cause by acetylene. If not possible allow small fires to remain burning if they are not posing a hazard or impinging on cylinder, this will

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prevent build-up pressure from the cylinders. Call fire brigade. Remove all cylinders from the path of the fire/flame. Cool cylinders exposed to the fire by applying large amounts of water from a safe location. Evacuate the area. Do not attempt to move cylinders involved in a fire until they are cold for at least one hour. Check by stopping the cooling process and note whether the cylinders surface dry rapidly or generate steam. Continue the cooling process until the cylinder surface remains wet without any dry patches forming quickly. Check with a bare hand that cylinders remain cool for at least 1 hour. Should any cylinders be found to be warm, repeat cooling process! If the cylinders surface no long show rapid dry patches after stopping the cooling process, immerse the cylinder in water for 12 hours to prevent spontaneous auto-ignition. Contact nearest AFROX branch.

**Protective Clothing**

Fire fighters putting off the flame of acetylene should wear approved self contained breathing apparatus with full face mask. Safety gloves and shoes, or boots, should be worn when handling cylinders.

**Environmental Precautions**

Acetylene is lighter than air, ensure that it is not trapped in confined spaces otherwise this could lead to formation of an oxygen deficient atmosphere. Ventilate all confined spaces using forced draught if necessary. Ensure that all electrically equipments are flameproof.

**6 ACCIDENTAL RELEASE MEASURES****Personal Precautions**

Acetylene act as a simple asphyxiant, Care should be taken when entering confined spaces where leaks may have occurred. Do not enter any potentially hazardous area with any source of ignition, such as lit cigarette, non-flameproof torch and cell phone.

**Small Spills**

Small leaks should be extinguished by shutting off the source of acetylene supply, e.g. closing the valve on the cylinder, or tightening the gland nut if it's possible. If unable to stop the small leaks "the source of acetylene", move the cylinder to a well ventilate area, away from any source of ignition .If the small leak has resulted in a flame use a multi-purpose dry powder extinguisher. If an extinguisher is not available, a welder's glove or heavy cloth soaked in water may be used to extinguish the flame.

**Large Spills**

Stop the source of acetylene if it can be stop without risk. Eliminate all sources of ignition and static discharges in the area. Restrict access to the area until completion of the clean-up procedure. Post warnings to prevent people from approaching the area. Wear adequate protective clothing when working near the source of leak. Ventilate the area using force draught if necessary. Ensure that all equipment is flameproof.

**7 HANDLING AND STORAGE**

Do not allow cylinders to slide or come into contact with sharp edges. Cylinder should always be transported in upright position, with valve uppermost and firmly secured to prevent rolling. Use "first in-first-out" inventory procedure or system to prevent full cylinder from being stored for excessive periods of time. Don't store acetylene & oxygen cylinder in a close proximity to each other. Oxygen/acetylene cylinder should not be stored in a same room because of these facts explosives, oxidizing agent, radioactive agent, organic peroxides, spontaneously combustible material. Cylinders should be stored away from any source of ignition/excessive heat. If cylinder has been stacked horizontal, stand it upright for at least 30 minutes before use to prevent acetone carryover. Keep out of reach of children.

**8 EXPOSURE CONTROLS/PERSONAL PROTECTION****Occupational Exposure Hazards**

Unknown 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 & personal protective equipment may also be required. Use suitable flameproof ventilation system separate from other exhaust ventilation systems. When exhausting direct to outside, supply sufficient replacement air to make up for air removed by exhaust system.

**Personal Protection**

Self-contained breathing apparatus should be worn when fighting larger fire. Safety goggles, gloves and shoes or boots should be worn when handling cylinders.

**9 PHYSICAL AND CHEMICAL PROPERTIES****PHYSICAL DATA**

Chemical Symbol	C <sub>2</sub> H <sub>2</sub>
Molecular Weight	26.038 g/mol
Specific Volume @ 20°C & 1 atm	918.0 ml/g
Relative density (air=1) @ 1 atm	0.908 g/ml
Flammability limits in air	2.5-82% (by volume)
Auto-ignition temperature	305°C
Colour	Unknown
Taste	Unknown
Odour	Ethereal when pure Garlic when commercial

**10 STABILITY AND REACTIVITY****Conditions to avoid**

Smoking, naked flame or any source of heat should not be brought near the cylinder storage are. Never use cylinders as rollers or to support or for any other purpose other than the storage of acetylene. Never tamper with pressure relief devices on the cylinder. Keep sparks, flames or any source of ignition away from the cylinder. Never test leaks with a flame.

**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 a pressure exceeding 150kpa. Should cylinder content burning inside, as indicated by a hot cylinder surface, this could lead to a build-up pressure, resulting in a cylinder rupture. **Refer to section 5 for treating hot cylinder.**

**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

**(For further information see Section 3. Adverse Health effects)**

**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 source of ignition should be in the vicinity. Large amounts should only be handled by the gas supplier.

**Disposal of Packaging**

The disposal of cylinders must only be handled by the gas supplier.

**14 TRANSPORT INFORMATION**

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**ROAD TRANSPORTATION**

UN No 1001  
Class 2.1  
Danger Group Flammable Gas  
Subsidiary Risk Asphyxiant  
ERG No 116  
Hazchem warning 2A Flammable gas

**SEA TRANSPORTATION**

IMDG 1001  
Class 2.1  
Label Flammable Gas 1

**AIR TRANSPORTATION**

ICAO/IATA Code 1001  
Class 2.1  
Danger Group Flammable Gas  
Packaging instructions  
- Cargo Forbidden  
- Passenger Forbidden  
Maximum quantity allowed  
- Cargo Forbidden  
- Passenger Forbidden

**15 REGULATORY INFORMATION**

Hazard Code	Statement	Description
H280		Contains gas under pressure, may explode if heated
H220		Extremely flammable gas

Refer to SABS 10234 : Globally Harmonized System of classification and labelling of chemicals (GHS) for explanation of the above.

National legislation: OHSAct and Regulations 85 of 1993

**16 OTHER INFORMATION****Bibliography**

Compressed Gas Association, Arlington, Virginia  
Handbook of Compressed Gases – 3<sup>rd</sup> Edition Matheson  
Matheson Gas Data Book – 6<sup>th</sup> Edition  
SABS 0265 - Labelling of Dangerous Substances

**17 EXCLUSION OF LIABILITY**

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