

**MATERIAL SAFETY DATA SHEET****# 001****Product Name** **ACETYLENE****1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER**

**Supplier Name** **BOC LIMITED (AUSTRALIA)**  
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**Web Site** <http://www.boc.com.au/>  
**Synonym(s)** 001 - MSDS NUMBER • DISSOLVED ACETYLENE • ETHYNE • PRODUCT CODES: 040, 041  
**Use(s)** FUEL • INDUSTRIAL APPLICATIONS  
**MSDS Date** 21 Oct 2008

**2. HAZARDS IDENTIFICATION****CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC CRITERIA****RISK PHRASES**

R12 Extremely Flammable.  
R5 Heating may cause an explosion.  
R6 Explosive with or without contact with air.

**SAFETY PHRASES**

S16 Keep away from sources of ignition - No smoking.  
S33 Take precautionary measures against static discharges.  
S9 Keep container in a well ventilated place.

**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

<b>UN No.</b>	1001	<b>DG Class</b>	2.1	<b>Subsidiary Risk(s)</b>	None Allocated
<b>Packing Group</b>	None Allocated	<b>Hazchem Code</b>	2[S]E	<b>EPG</b>	2A1

**3. COMPOSITION/ INFORMATION ON INGREDIENTS**

<b>Ingredient</b>	<b>Formula</b>	<b>CAS No.</b>	<b>Content</b>
ACETYLENE	C2-H2	74-86-2	>98%

**4. FIRST AID MEASURES**

**Eye** Exposure is considered unlikely.

**Inhalation** If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poisons Information Centre (PIC) on 13 11 26 (Australia Wide) or a doctor.

**Skin** Treatment for thermal burns by immersing affected area in tepid water and lightly bandaging with sterile dressings.

**Ingestion** Due to product form and application, ingestion is considered unlikely.

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**Advice to Doctor** Treat for asphyxia.

## 5. FIRE FIGHTING MEASURES

<b>Flammability</b>	Highly flammable. Heating to decomposition produces acrid smoke and irritating fumes. Product will add fuel to a fire. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, petrol engines, heaters, naked lights, pilot lights, mobile phones, static electricity (such as from plastic materials or synthetic clothing) etc. when handling.
<b>Fire and Explosion</b>	Highly flammable. Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. Call fire brigade. This product will add fuel to a fire. Cool cylinders exposed to fire by applying water from a protected location. Do not approach cylinders suspected of being hot. Refer to AS 4332 [2004], Appendix E, for additional information.
<b>Extinguishing</b>	Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve. If the gas source cannot be isolated, do not extinguish the flame, since re-ignition and explosion could occur. Await arrival of emergency services or manufacturer's advisor. Drench and cool cylinders with water spray from protected area at a safe distance. If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher. Do not move cylinders for at least 24 hours. Avoid shock and bumps to cylinders.
<b>Hazchem Code</b>	2[S]E

## 6. ACCIDENTAL RELEASE MEASURES

<b>Spillage</b>	If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer/supplier of leak. Wear appropriate PPE and carefully move it to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.
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## 7. STORAGE AND HANDLING

<b>Storage</b>	Do not store near sources of ignition, oxidising agents, poisons, flammable liquids or combustible materials. Cylinders should be stored: upright, prevented from falling, in a secure area; below 45°C, in a dry, well ventilated enclosure constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits. Post "No Smoking or Open Flames" signs in the storage areas. Refer to applicable legislation on flammable storage quantity restrictions. Never transfer acetylene to another cylinder or other container.
<b>Handling</b>	Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas. Never open an acetylene cylinder valve without the regulator attached. Gas regulator of suitable pressure and flow rating fitted to cylinder and manifold with low pressure gas distribution equipment which controls fuel gas mixture and flame. The regulator and other equipment must be compatible with the product and suited for the particular use. Never "snift" acetylene as it may ignite spontaneously. Instead, carefully inspect the outlet and if there are any signs of dirt, blow it out with a jet of clean compressed air or nitrogen.

## 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

<b>Exposure Stds</b>	ACETYLENE ES-TLV      Simple asphyxiant (ACGIH): ES-TWA:      Simple asphyxiant WES-TWA:      Simple asphyxiant
<b>Biological Limits</b>	No biological limit allocated.
<b>Engineering Controls</b>	Maintain adequate ventilation. Confined areas (eg. tanks) should be adequately ventilated or gas tested. Flammable/explosive vapours may accumulate in poorly ventilated areas.
<b>PPE</b>	Wear leather or cotton gloves, safety boots and safety glasses. Where an oxygen-deficiency risk exists, wear an Air-line respirator. If undertaking welding operations, the appropriate personal protective equipment should be worn. Clothing must be 100% cotton or fire-resistant (eg. proban, nomex) rather than synthetic materials which can generate enough static electricity to cause an ignition and also can melt onto the skin at flame temperatures.



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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	COLOURLESS GAS	<b>Solubility (Water)</b>	SOLUBLE
<b>Odour:</b>	GARLIC-LIKE ODOUR	<b>Specific Gravity</b>	NOT AVAILABLE
<b>pH</b>	NOT AVAILABLE	<b>% Volatiles</b>	NOT AVAILABLE
<b>Vapour Pressure</b>	4700 kPa @ 25°C	<b>Flammability</b>	HIGHLY FLAMMABLE
<b>Boiling Point</b>	-84°C	<b>Flash Point</b>	< 23°C
<b>Melting Point</b>	NOT AVAILABLE	<b>Upper Explosion Limit</b>	80 - 85 %
<b>Evaporation Rate</b>	NOT AVAILABLE	<b>Lower Explosion Limit</b>	2.5 %
<b>Autoignition Temperature</b>	305°C	<b>Critical Pressure</b>	6, 242 kPa
<b>Critical Temperature</b>	36.3°C (dissolved in acetone and porous medium)	<b>Cylinder pressure (when full)</b>	1550 kPa @ 15°C
<b>Vapour Density</b>	0.906 (Air = 1)		

## 10. STABILITY AND REACTIVITY

**Chemical Stability** Stable under recommended conditions of storage.

**Conditions to Avoid** Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

**Material to Avoid** Reacts with copper, copper alloys (>70% copper), silver & mercury to form explosive acetylides. May decompose violently at high temperatures and/or pressures or in the presence of a catalyst. May undergo exothermic decomposition to carbon (soot) and hydrogen gas. Hazardous by-products may be produced when this gas/gas mixture is used in welding, cutting and associated processes.

**Decomposition** Heating to decomposition produces acrid smoke and irritating fumes.

**Hazardous Reactions** Polymerizes with evolution of heat. Avoid contact with curing agents, accelerators, and/or initiators.

## 11. TOXICOLOGICAL INFORMATION

**Health Hazard Summary** Asphyxiant gas - non irritant. May replace oxygen in the inhaled air and cause asphyxiation. As the amount of oxygen inhaled is reduced from 21-14% the pulse rate will accelerate and the rate and volume of breathing will increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14-10% judgement becomes faulty, severe injuries may cause no pain. Muscular effort leads to rapid fatigue. Further reduction to 6% may cause nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in a few minutes.

**Eye** Non irritant.

**Inhalation** Non irritating - Asphyxiant. Effects are proportional to oxygen displacement.

**Skin** Non irritant.

**Ingestion** Ingestion is considered unlikely due to product form.

**Toxicity Data** ACETYLENE (74-86-2)  
LC<sub>50</sub> (Inhalation): 50pph/5M (human)  
TC<sub>50</sub> (Inhalation): 20 pph (human)

## 12. ECOLOGICAL INFORMATION

**Environment** Fume from fabrication processes which use this gas/gas mixture may be harmful to the environment.

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal** Cylinders should be returned to the manufacturer or supplier for disposal of contents.

**Legislation** Dispose of in accordance with relevant local legislation.

## 14. TRANSPORT INFORMATION

**Transport** Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.

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## CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

Shipping Name	ACETYLENE, DISSOLVED			
UN No.	1001	DG Class	2.1	Subsidiary Risk(s) None Allocated
Packing Group	None Allocated	Hazchem Code	2[S]E	EPG 2A1

## 15. REGULATORY INFORMATION

Poison Schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).
AICS	All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

Additional Information	When using this gas/gas mixture for welding, cutting and associated processes, additional hazards may be generated by the process such as radiation, noise and fume. Risk assessments should be made for each activity to identify and quantify the individual hazards involved. Please refer to the BOC document "Welding Hazards and Risk Management" available from <a href="http://www.boc.com">www.boc.com</a> and refer to the relevant Material Safety Data Sheets for the welding consumables being used or, if available, the materials being welded.
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Application method: Never open an acetylene cylinder valve without the regulator attached. Gas regulator of suitable pressure and flow rating fitted to cylinder and manifold with low pressure gas distribution equipment which controls fuel gas mixture and flame. The regulator and other equipment must be compatible with the product and suited for the particular use. Never "sniff" acetylene as it may ignite spontaneously. Instead, carefully inspect the outlet and if there are any signs of dirt, blow it out with a jet of clean compressed air or nitrogen.

### ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

CNS - Central Nervous System.

EINECS - European INventory of Existing Commercial chemical Substances.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

mg/m<sup>3</sup> - Milligrams per cubic metre.

NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

### HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

### Report Status

This document has been compiled by RMT on behalf of the manufacturer of the product and serves as the manufacturer's Material Safety Data Sheet ('MSDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of

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the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this MSDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this MSDS.

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**MSDS Date:** 21 Oct 2008

**End of Report**