Safety Data Sheet – Acetylene

1. Identification of the substance/preparation and the company/undertaking

Identification of the substance/preparation : Acetylene
Chemical Formula : C_2H_2
Synonyms : Acetylene (dissolved), Ethyne, welding gas
Use of the substance/preparation : General Industrial
Company :
Dixons of Westerhope
Newbiggin Lane
Westerhope
Newcastle upon Tyne
NE5 1LX
Telephone : 0800 433 4331

2. Composition/information on ingredients

Components	EINECS/ELINCS	CAS Number	Concentration	Classification
Acetylene	200-816-9	74-86-2	100%	F+ R5 R6 R12

Refer to section 16 for full text of each relevant R-Phrase.

3. Hazards Identification

Classification

A5 Heating may cause an explosion.
R6 Explosive with or without contact with air.
R12 Extremely flammable.

Emergency overview

High pressure gas.
Can cause rapid suffocation.
Extremely flammable.
May form explosive mixtures in air.
Immediate fire and explosion hazard exists when mixed with air at concentrations exceeding the lower flammability limit (LFL).
High concentrations that can cause rapid suffocation are within the flammable range and should not be entered.
Avoid breathing gas.
Self-contained breathing apparatus (SCBA) may be required.

Potential health effects

Inhalation :	May cause anaesthetic effects. In high concentrations may cause asphyxiation. Symptoms include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves.
Skin contact :	No adverse effect.
Ingestion :	Ingestion is not considered a potential route of exposure.
Chronic health hazard :	Not applicable.
Symptoms :	Exposure to oxygen deficient atmosphere may cause the following symptoms – Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.

4. First Aid measures

General Advice :	Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Ingestion :	Ingestion is not considered a potential route of exposure.
Inhalation :	Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of shortness of breath, give oxygen.

5. Fire-Fighting measures

Suitable extinguishing media :	All known extinguishing media can be used.
Specific hazards :	Incomplete combustion may form carbon monoxide. Upon exposure to intense heat or flame cylinder will vent rapidly and/or rupture violently. Keep containers and surroundings cool with water spray. Extinguish fire only if gas flow can be stopped. If possible shut off the source of gas and allow the fire to burn itself out. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Move away from container and cool with water from a protected position. Keep adjacent cylinders cool by spraying large amounts of water until fire burns itself out. If flames are accidentally extinguished, explosive re-ignition may occur; therefore, appropriate measures should be taken (e.g. total evacuation to protect persons from cylinder fragments and toxic fumes should a rupture occur).
Special protective equipment :	Wear self-contained breathing apparatus for fire fighting if necessary. For Fire-Fighters.

6. Accidental release measures

Personal precautions :	Evacuate personnel to safe areas. Remove all sources of ignition. Never enter a confined space or other area where the flammable gas concentration is greater than 10% of its LFL. Ventilate the area.

Environmental precautions :	Do not discharge into any place where its accumulation could be dangerous. Prevent further leakage or spillage if safe to do so. Should not be released into the environment.
Methods for cleaning up :	Ventilate the area. Approach suspected leak areas with caution.
Additional advice :	If possible, stop flow of product. Increase ventilation to the release area and monitor oxygen level. If leak is from cylinder or cylinder valve, call the Dixons emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

7. Handling and storage

Handling : Acetylene cylinders are heavier than other cylinders because they are packed with a porous filler material and acetone. Never use acetylene in excess of 15 psig pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50ºC (122ºF). Only experienced and properly instructed persons should handle compressed gases. Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Use an adjustable strap wrench to remover over-tight of rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connection the container for use ensure that back feed from the system into container is prevented. Ensure the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Open valve slowly. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Close valve after each use and when empty. Replace outlet caps or plugs and container caps as soon as container is disconnected from equipment. Do not subject containers to abnormal mechanical shocks which may cause damage to their valve or safety devices. Never attempt to lift a cylinder by its valve protection cap or guard. Do not use containers as rollers or supports or for any other purpose than to contain the gas as supplier. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Do not smoke while handling product or cylinders. Never recompress a gas or a gas mixture without first consulting the supplier. Never attempt to transfer gases from one cylinder/container to another. Always use back low protective device in piping. Purge air from system before introducing gas. When returning cylinder install valve outlet cap or plug leak tight. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be

subjected to temperatures above 50ºC (122ºF). Prolonged periods of cold temperature below -30ºC (-20ºF) should be avoided. Ensure equipment is adequately earthed.

Storage : Full containers should be stored so that oldest stock is used first. Containers should be stored in a purpose built compound which should be well ventilated, preferably in the open air. Stored containers should be periodically checked for general condition and leakage. Observe all regulations and local requirements regarding storage of containers. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valve guards or caps should be in place. Keep containers tightly closed in a cool, well-ventilated. Store containers in a location free from fire risk and away from sources of heat or ignition. Full and empty cylinders should be segregated. Do not allow storage temperatures to exceed 50ºC (122ºF). Return empty containers in a timely manner. Smoking should be prohibited within storage areas or while handling product or containers. Display "No Smoking or Open Flames" signs in the storage areas. The amounts of flammable or toxic gases in storage should be kept to a minimum. Return empty containers in a timely manner

Technical measures/precautions : Containers should be segregated in the storage area according to the various categories (e.g. flammable, toxic, etc.) and in accordance with local regulations. Keep away from combustible material. All electrical equipment in the storage areas should be compatible with flammable materials stored. Containers containing flammable gases should be stored away from other combustible materials. Where necessary, containers containing oxygen and oxidants should be separated from flammable gases by a fire resistant partition.

8. Exposure controls/personal protection

Respiratory protection :	Self-contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmosphere. Air purifying respirators will not provide protection. Users of breathing apparatus must be trained.
Hand protection :	Sturdy work gloves are recommended for handling cylinders. The breakthrough time of the selected glove(s) must be greater than the intended use period.
Eye protection :	Safety glasses are recommended when handling cylinders.
Skin and body protection :	Safety shoes are recommended when handling cylinders. Flame retardant protective clothing.
Special Instructions :	Ensure adequate ventilation, especially in confined areas.

9. Physical and chemical properties

Form :	Dissolved gas.
Colour :	Colourless gas.
Odour :	Poor warning properties at low concentrations. Garlic-like.
Molecular weight :	26.04 g/mol
Relative vapour density :	0.899 (air - 1)
Vapour pressure :	638.14 psig (44.00 bar) at 20ºC
Density :	0.0011 g/cm$_3$ at 21ºC (as vapour)
Specific volume :	0.9221 m$_3$/kg at 21ºC
Boiling point/range :	-84.2ºC

Critical temperature :	35.6ºC
Melting point/range :	-80.8ºC
Flash point :	-18ºC
Autoignition temp :	325ºC
Upper flammability limit :	83% (V)
Lower flammability limit :	2.4% (V)
Water solubility :	1.185 g/l

10. Stability and reactivity

Stability :	Stable under normal conditions.
Conditions to avoid :	Cylinders should not be exposed to sudden shock or sources of heat, flames or sparks. May form explosive mixtures with air and oxidizing agents.
Materials to avoid :	Under certain conditions, acetylene can react with copper, silver and mercury to form acetylides, compounds which can act as ignition sources. Brasses containing less that 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 tend to enhance the formation of copper acetylides, oxygen and oxidizing agents.
Hazardous reactions :	Unstable. Stable as shipped. Do not use at pressure above 15 psig

11. Toxicological information

No known toxicological effects from this product.

12. Ecological information

Ecotoxicity effects	
Aquatic toxicity :	No data available.
Toxicity to other organisms :	No data available.
Persistence and degradability	
Mobility :	No data available.
Bioaccumulation :	No data available.
Further Information :	This product has no known eco-toxicological effects.

13. Disposal considerations

Waste from residues/unused product :	Contact supplier if guidance is required. Return unused product in original cylinder to supplier. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.
Contaminated packaging :	Return cylinder to supplier.

14. Transport Information ADR

Proper shipping name :	Acetylene dissolved.
UN/ID no. :	UN1001
Labelling ADA :	2.1
ADR/RID hazard ID no. :	239
IATA	
Proper shipping name :	Acetylene dissolved.
Class :	2.1
UN/ID no. :	UN1001
IMDG	
Proper shipping name :	Acetylene dissolved.
Class :	2.1
UN/ID no. :	UN1001
RID	
Proper shipping name :	Acetylene dissolved.
Class :	2.1
UN/ID no. :	UN1001
Further Information :	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of potential hazards of the load and knows what to do in the event of an accident or an emergency.

15. Regulatory information

Labelling according to EEC directive
Number in Annex I of Dir : 601-015-00-0 67/548

Hazard symbol :	F+ Extremely flammable.
R-phrases :	R5 Heating may cause an explosion.
	R6 Explosive with or without contact with air.
	R12 Extremely flammable.
S-phrases :	S9 Keep container in a well-ventilated place.
	S16 Keep away from sources of ignition.
	S33 Take precautionary measures against static discharges.

Country	Regulatory list	Notification
USA	TSCA	Included on inventory
EU	EINECS	Included on inventory
Canada	DSL	Included on inventory
Australia	AICS	Included on inventory
South Korea	ECL	Included on inventory
China	SEPA	Included on inventory
Philippines	PICCS	Included on inventory
Japan	ENCS	Included on inventory

16. Other information

Ensure all national/local regulations are observed.

R-phrase(s) Substance/preparation : A5 heating may cause an explosion, A6 explosive with or without contact with air, Ri2 extremely flammable.
Components : R5 heating may cause an explosion, R6 explosive with or without contact with air, Ri2 extremely flammable.
Components prepared by : Dixons of Westerhope Limited.

This safety data sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.