

## Safety data sheet Acetylene, dissolved.

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### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

##### Product name

Acetylene, dissolved.

EC No (from EINECS): 200-816-9

CAS No: 74-86-2

Index-Nr. 601-015-00-0

Chemical formula C<sub>2</sub>H<sub>2</sub>

REACH Registration number:

01-2119457406-36

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

##### Relevant identified uses

Industrial and professional. Perform risk assessment prior to use.

##### Uses advised against

Consumer use.

#### 1.3. Details of the supplier of the safety data sheet

##### Company identification

BOC, Priestley Road, Worsley, Manchester M28 2UT

E-Mail Address ReachSDS@boc.com

#### 1.4. Emergency telephone number

Emergency phone numbers (24h): 0800 111 333

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Dissolved gas) - Contains gas under pressure; may explode if heated.

Flam. Gas 1 - Extremely flammable gas.

- Explosive with or without contact with air.

-

##### Classification acc. to Directive 67/548/EEC & 1999/45/EC

F+; R12, R5, R6

Heating may cause an explosion.

Explosive with or without contact with air.

Extremely flammable.

##### Risk advice to man and the environment

Dissolved gas

#### 2.2. Label elements

##### - Labelling Pictograms



- Signal word

Danger

#### - Hazard Statements

H280 Contains gas under pressure; may explode if heated.  
H220 Extremely flammable gas.  
EUH006 Explosive with or without contact with air.

#### - Precautionary Statements

##### Precautionary Statement Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

##### Precautionary Statement Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 Eliminate all ignition sources if safe to do so.

##### Precautionary Statement Storage

P403 Store in a well-ventilated place.

##### Precautionary Statement Disposal

Dispose of cylinder via gas supplier only; Cylinder contains a porous material which in some cases contains asbestos.

#### 2.3. Other hazards

For safety reasons, the acetylene is dissolved in acetone or dimethylformamide in the gas receptacle. Vapour of the solvent is carried away as impurity when the acetylene is extracted from the gas receptacle. The concentration of the solvent vapour in the gas is lower than the concentration limits to change the classification of the acetylene.

### SECTION 3: Composition/information on ingredients

Substance / Mixture: Substance.

#### 3.1. Substances

Acetylene, dissolved.

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Contains no other components or impurities which will influence the classification of the product.

#### 3.2. Mixtures

Not applicable.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

##### First Aid General Information:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and

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rested. Call a doctor. Apply artificial respiration if breathing stopped.

### **First Aid Inhalation:**

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

### **First Aid Skin / Eye:**

Adverse effects not expected from this product.

### **First Aid Ingestion:**

Ingestion is not considered a potential route of exposure.

### **4.2. Most important symptoms and effects, both acute and delayed**

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

### **4.3. Indication of any immediate medical attention and special treatment needed**

Obtain medical assistance.

## **SECTION 5: Fire fighting measures**

### **5.1. Extinguishing media**

#### **Suitable extinguishing media**

Water. Foam. Dry powder. Use water spray or fog to control fire fumes.

#### **Unsuitable extinguishing media**

Carbon dioxide

### **5.2. Special hazards arising from the substance or mixture**

#### **Specific hazards**

Exposure to fire may cause containers to rupture/explode.

#### **Hazardous combustion products**

If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:  
Carbon monoxide.

### **5.3. Advice for fire-fighters**

#### **Specific methods**

If possible, stop flow of product. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Move container away or cool with water from a protected position. Continue water spray from protected position until container stays cool. Prevent water used in emergency cases from entering sewers and drainage systems.

#### **Special protective equipment for fire-fighters**

Clothing for fire-fighters conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for firefighters. Performance requirements for protective clothing for firefighting. EN 15090 Footwear for firefighters. EN 443 Helmets for fire fighting in buildings and other structures. EN 659 Protective gloves for firefighters. EN 137 Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Consider the risk of potentially explosive atmospheres.

### **6.2. Environmental precautions**

Try to stop release.

### **6.3. Methods and material for containment and cleaning up**

Ventilate area.

### **6.4. Reference to other sections**

See also sections 8 and 13.

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from system before introducing gas. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges). Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Avoid contact with pure copper, mercury, silver and brass with greater than 65% copper. Avoid suckback of water, acid and alkalis. Solvent may accumulate in piping systems. For maintenance use appropriate resistant gloves (specify for DMF or acetone), goggles. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Consider the use of only non-sparking tools. Do not allow backfeed into the container. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Never use direct flame or electrical heating devices to raise the pressure of a container. 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. Ensure the complete gas system has been (or is regularly) checked for leaks before use. 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. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. Never attempt

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to transfer gases from one cylinder/container to another. Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment. Do not use alloys containing more than 43% silver. For further information on safe use refer to EIGA "Code of Practice: Acetylene" IGC Doc 123.

### 7.2. Conditions for safe storage, including any incompatibilities

Secure cylinders to prevent them from falling. Keep container below 50°C in a well ventilated place. Segregate from oxidant gases and other oxidants in store. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere. Acetylene cylinders should be stored vertically. If a cylinder has been transported horizontally, it should be stood upright for a minimum of 1 hour prior to use. This will allow the acetone to evenly re-distribute within the cylinder and prevent acetone being carried into the flame during use causing a 'flame thrower' effect.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No occupational exposure limit.

#### Derived No Effect Levels

Type	Exposure	Value	Population	Effects
DNEL	Long term Inhalation	2675 mg/m <sup>3</sup>	Workers	Systemic
DNEL	Short term Inhalation	2675 mg/m <sup>3</sup>	Workers	Systemic
DNEL	Long term Inhalation	2675 mg/m <sup>3</sup>	Workers	Local
DNEL	Short term Inhalation	2675 mg/m <sup>3</sup>	Workers	Local

PNEC not available.

### 8.2. Exposure controls

#### Appropriate engineering controls

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system. Gas detectors should be used when quantities of flammable gases/vapours may be released. Keep concentrations well below lower explosion limits. The substance must be handled in

accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.

#### Personal protective equipment

##### Eye and face protection

Wear eye protection to EN 166 when using gases.

##### Skin protection

##### Hand protection

Advice: Wear working gloves and safety shoes while handling gas cylinders.

Guideline: EN 12477 Protective gloves for welders

#### Other protection

Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/welding. Wear flame resistant/retardant clothing. Take precautionary measures against static discharges. Wear working gloves and safety shoes while handling gas cylinders. ISO 20345 Safety footwear.

#### Respiratory protection

Not required

#### Thermal hazards

Not required

#### Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### General information

**Appearance/Colour:** Colourless gas.

**Odour:** Garlic like Poor warning properties at low concentrations.

#### Odour threshold:

Odour threshold is subjective and inadequate to warn for over exposure.

**Melting point:** -80,8 °C

**Flash point:** Not applicable for gases and gas mixtures.

**Flammability range:** 2,3 %(V) - 88 %(V)

**Vapour Pressure 20 °C:** 44 bar

**Relative density, gas:** 0,9

**Solubility in water:** 1185 mg/l

**Partition coefficient: n-octanol/water:** 0,37 logPow

**Autoignition temperature:** 305 °C

**Thermal decomposition:** 635 °C

#### Viscosity:

Dynamic: 0,011 mPa.s

#### Explosive properties:

Explosive acc. EU legislation: Not explosive.

Explosive acc. transp. reg.: Not explosive.

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**Oxidising properties:** Not applicable.  
**Molecular weight:** 26 g/mol  
**Sublimation point:** -84 °C  
**Critical temperature:** 35,2 °C  
**Relative density, liquid:** Not applicable.

### 9.2. Other information

Even at concentrations above 88%, all the way up to 100%, acetylene is still a significant hazard because it can explosively decompose even at these high concentrations. Minimum ignition energy: 0,019 mJ. Explosion group: IIC.

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Forms explosive acetylides with copper, silver and mercury. Do not use alloys containing more than 65% copper.

#### 10.2. Chemical stability

Dissolved in a solvent supported in a porous mass., Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

May react violently with oxidants., Can form potential explosive atmosphere in air.

#### 10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. May decompose violently at high temperature and/or pressure or in the presence of a catalyst High pressure. High temperature.

#### 10.5. Incompatible materials

Forms explosive acetylides with copper, silver and mercury. Do not use alloys containing more than 65% copper. Oxidising agents. Air, Oxidiser. For material compatibility see latest version of ISO-11114.

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:  
Carbon monoxide.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

##### Acute inhalation toxicity

Acetylene has low inhalation toxicity, the LOAEC for mild intoxication in humans with no residual effects is 100,000ppm (107,000 mg/m<sup>3</sup>)

Value: LC50  
Species: Rat  
Exposure time: 4 h  
Value in non-standard unit: 780000 - 900000 ppm

##### Repeated dose toxicity

Species: Rat  
Route of application: Inhalation

Value type: NOAEC  
Value: 800000 ppm

Species: Rat  
Value type: LOAEC  
Value: 28700 ppm

##### Genetic toxicity in vitro

No known effects from this product.

##### Assessment carcinogenicity

No evidence of carcinogenic effects.

### SECTION 12: Ecological information

#### 12.1. Toxicity

No ecological damage caused by this product.

##### Acute and prolonged toxicity fish

Species: Various (Freshwater)  
Exposure time: 96 h  
Value type: LC50  
Value in standard unit mg/l: 545 mg/l

##### Acute toxicity aquatic invertebrates

Species: Water flea (Daphnia magna)  
Exposure time: 48 h  
Value type: LC50  
Value in standard unit mg/l: 242 mg/l

##### Toxicity aquatic plants

Species: Algae  
Exposure time: 96 h  
Value type: EC50  
Value in standard unit mg/l: 57 mg/l

##### Toxicity to soil dwelling organisms

Species: Earthworm (Lumbricus terrestris)  
Exposure time: 14 d  
Value type: LC50  
Value in standard unit ppm: 67 ppm

#### 12.2. Persistence and degradability

Not readily biodegradable.

##### Photo degradation

This product can be degraded by abiotic (eg. Chemical or photolytic) processes.

##### Stability in water

Will not undergo hydrolysis.

#### 12.3. Bioaccumulative potential

Because of the low log Kow, accumulation in organisms is not to be expected.

#### 12.4. Mobility in soil

Because of its high volatility, the product is unlikely to cause ground or water pollution.

#### 12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

#### 12.6. Other adverse effects

No known effects from this product.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

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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. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. Dispose of cylinder via gas supplier only; Cylinder contains a porous material which in some cases contains asbestos. Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods.

Gases in pressure containers (including halons) containing dangerous substances

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### SECTION 14: Transport information

#### ADR/RID

**14.1. UN number**  
1001

**14.2. UN proper shipping name**  
Acetylene, dissolved

**14.3. Transport hazard class(es)**  
Class: 2  
Classification Code: 4F  
Labels: 2.1  
Hazard number: 239  
Tunnel restriction code: (B/D)  
Emergency Action Code: 2SE

**14.4. Packing group (Packing Instruction)**  
P200

**14.5. Environmental hazards**  
None.

**14.6. Special precautions for user**  
None.

#### IMDG

**14.1. UN number**  
1001

**14.2. UN proper shipping name**  
Acetylene, dissolved

**14.3. Transport hazard class(es)**  
Class: 2.1  
Labels: 2.1  
EmS: F-D, S-U

**14.4. Packing group (Packing Instruction)**  
P200

**14.5. Environmental hazards**  
None.

**14.6. Special precautions for user**  
None.

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**  
Not applicable.

#### IATA

**14.1. UN number**  
1001

**14.2. UN proper shipping name**  
Acetylene, dissolved

**14.3. Transport hazard class(es)**  
Class: 2.1  
Labels: 2.1

**14.4. Packing group (Packing Instruction)**  
P200

**14.5. Environmental hazards**  
None.

**14.6. Special precautions for user**  
None.

#### Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

### SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**  
Seveso Directive 96/82/EC: Listed

#### Other regulations

Order in Council No. 30 as amended by the Compressed Acetylene Order 1947 made under the Explosives Act 1875, defines acetylene gas at pressures of more than 9 psi (0.62 bar) as being an explosive and requires that it may not be held:

(a) at pressures in excess of 9 psi (0.62 bar) above the atmosphere, except as approved by the Secretary of State, nor

(b) at pressures greater than 22 psi (1.5 bar) above that of the atmosphere, except when kept in conditions approved by the Secretary of State, in a manner, and for a purpose, defined in the Compressed Acetylene Order 1947.

Prior approval is not required for installations operating between 9 psi and 22 psi (0.62 bar and 1.5 bar), provided the conditions of Certificate of Exemption No. 2 1989 ,

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made under the Explosives Act (1875) (Exemptions) Regulations 1979 are complied with.  
Dangerous Substances and Explosive Atmospheres Regulations (DSEAR 2002 No. 2776)  
Management of Health and Safety at Work Regulations (1999 No. 3242)  
The Regulatory Reform (Fire Safety) Order 2005  
The Regulatory Reform (Fire Safety) Order 2005 (2005 No. 1541)  
Control of Substances Hazardous to Health Regulations (COSHH, 2002 No. 2677)  
Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations (EPS, 1996 No. 192)  
Provision and Use of Work Equipment Regulations (PUWER, 1998 No. 2306)  
Personal Protective Equipment Regulations (1992 No. 2966)  
Control of Major Accident Hazards Regulations (COMAH, 1999 No. 743)  
Chemical Hazards Information and Packaging for Supply (CHIP, 1994 No. 3247)  
Pressure Systems Safety Regulations (PER, 2000 No. 128)

### 15.2. Chemical safety assessment

A CSA does not need to be carried out for this product.

### SECTION 16: Other information

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

#### Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

#### Further information

##### Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.

As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

#### References

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:

European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.

European Chemical Agency: Information on Registered Substances <http://apps.echa.europa.eu/registered/registered-sub.aspx#search>

European Industrial Gases Association (EIGA) Doc. 918/11 Classification, Labelling and Safety data sheet guide.

ISO 10156:2010 Gases and gas mixtures -- Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.

Matheson Gas Data Book, 7th Edition.

National Institute for Standards and Technology (NIST) Standard Reference Database Number 69

The ESIS (European chemical Substances 5 Information System) platform of the former European Chemicals Bureau (ECB) ESIS (<http://ecb.jrc.ec.europa.eu/esis/>).  
The European Chemical Industry Council (CEFIC) ERICards.  
United States of America's National Library of Medicine's toxicology data network TOXNET (<http://toxnet.nlm.nih.gov/index.html>)  
Substance specific information from suppliers.  
EH40 (as ammended) Workplace exposure limits.

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