SAFETY DATA SHEET

In compliance with EC Regulations No.: 1907/2006, 830/2015 and 1272/2008 (CLP).

Revision Date: 27 October 2020 - Version 6.0

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name: ACETYLENE, DISSOLVED
Product Code #: 330201

CAS No.: 74-86-2
Chemical Formula: C_2H_2

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

Relevant identified uses
Industrial and professional uses only. Perform risk assessment prior to use.

Uses advised against: This product is not recommended for any industrial, professional or consumer use other than the Intended Uses above and the instructions written in this Safety Data Sheet.

1.3 Details of the supplier of the safety data sheet

Company/undertaking identification

Supplier/Manufacturer:

Marichem Marigases Hellas SA
Sfaktirias 64,
185 45 Piraeus,
Greece
Tel. No.: ++30 210 4148800
Fax No.: ++30 210 4133985
http://www.marichem-marigases.com

e-mail: mail@marichem-marigases.com

1.4 Emergency telephone number

Tel. No.: ++30 210 4148800 (including working hours)

Emergency Information:
Inside U.S. and Canada: (800)-424-9300 (CHEMTREC)
Outside U.S. and Canada: 1-703-527-3887 (CHEMTREC)
National Emergency Centre (Greece): ++30 210 7793777

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

Physical hazards

Flammable gases - Category 1.
Chemically unstable gases - Category A.
Gases under pressure - Dissolved gas.

Hazard Statements

H220: Extremely flammable gas.
H231: May react explosively even in the absence of air at elevated pressure and/or temperature.
H280: Contains gas under pressure; may explode if heated.
EUH006: Explosive with or without contact with air.
May form explosive mixtures in air.

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

Hazard pictograms:

GHS02 **GHS04**

Signal word: Danger

Hazard Statements

H220: Extremely flammable gas.
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EUH006: Explosive with or without contact with air.
May form explosive mixtures in air.

Precautionary Statements

Prevention

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P202: Do not handle until all safety precautions have been read and understood.
P271: Use only outdoors or in a well-ventilated area

Response

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P314: Get medical advice/attention if you feel unwell.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381: Eliminate all ignition sources if safe to do so.

Storage

P403: Store in a well ventilated place.

Disposal

P501: Disposal of contents/container to be specified in accordance with regulations.

2.3 Other Hazards (not otherwise classified)

Odour: Strong smell of garlic
Appearance: Gas dissolved under pressure
Contact with eyes: May cause irritation, looking into the welding / brazing flame with incorrect or insufficient eye protection may cause arc-eye.
Contact with skin: May cause irritation
Inhalation: Inhalation of fumes formed during welding and or cutting may be harmful.
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.

Mixture/substance classification and labelling according to Directive 67/548/EEC, European Dangerous Preparations Directive (1999/45/EC), European Regulation 648/2004 and their amendments.

Symbol: F+

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 well ventilated place.
	S16:	Keep away from ignition sources – No smoking.
	S33:	Take precautionary measures against static discharges.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical Composition:

Substance	CAS Number	Proportion	Classification*
Acetylene Dissolved	00074-86-2	100%	H220; H231; H280; EUH006.

Impurities/Components. Contains no other components, which will influence the classification of the product.

*See section 16 for the full text of the Hazard Code(s) declared above.

Occupational Exposure Limits, if available, are listed in section 8.

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 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.

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 fire-fighters. Performance requirements for protective clothing for fire fighting. 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 — Selfcontained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking.

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.

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 contaminates particularly oil and water. Never attempt 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 redistribute 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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

No occupational exposure limit.

Derived No Effect Levels

Type	Exposure	Value	Population	Population
DNEL	Long term Inhalation	2675 mg/m³	Workers	Systemic
DNEL	Short term Inhalation	2675 mg/m³	Workers	Systemic
DNEL	Long term Inhalation	2675 mg/m³	Workers	Local

DNEL	Short term Inhalation	2675 mg/m³	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.

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 log Pow
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.

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.

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.

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/m3)
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.

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.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

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
EWC Nr. 16 05 04*

14. TRANSPORT INFORMATION

14.1 Proper shipping name: Acetylene, Dissolved

14.2 LAND TRANSPORT

UN number:	1001	RID-class:	2.1
ADR class:	2.1	ADR/RID packing group:	N/A
Labeling:	Flammable gas - 2.1		
Packing group (Packing Instruction):	P200		

14.3 SEA TRANSPORT
UN number: 1001
IMDG class: 2.1
IMDG packing group (Packing Instruction): P200
EmS: F-D, S-U
Labeling: Flammable gas - 2.1

14.4 AIR TRANSPORT
UN number: 1001
ICAO class: 2.1
ICAO packing group (Packing Instruction): P200
Labeling: Flammable gas - 2.1

14.5 Other Transport Information
Avoid transport on vehicles where the load space is not separated from 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.

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, 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.

16. OTHER INFORMATION

16.1 Full text of Hazard Code(s) referred in Section 3.

H220: Extremely flammable gas.
H231: May react explosively even in the absence of air at elevated pressure and/or temperature.
H280: Contains gas under pressure; may explode if heated.
EUH006: Explosive with or without contact with air.

16.2 Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport Association.
ICAO: International Civil Aviation Organization.
bw: Body weight.
Carc.: Carcinogenicity.
CAS number: Chemical Abstracts Service number.
CLP: Classification Labelling Packaging Regulation.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
DNEL: Derived No Effect Level.
dw: Dry weight.
EC number: EINECS and ELINCS number.
EC: European Commission.
EC50: Half maximal effective concentration.
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EmS: Emergency Schedule.
ERC: Environmental Release Category.
ES: Exposure scenario.
food: oral feed.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
Irrit.: Irritation.
LC50: Lethal concentration, 50 %.
LD50: Median Lethal dose.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
MK value: Maximum Concentration value.
NCO: An international corporation that provides customer service contracting.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
OECD: Organisation for Economic Cooperation and Development.
PBT: Persistent, Bioaccumulative and Toxic.
PNEC: Predicted No Effect Concentration.
PROC: Process category.
REACH: The Registration, Evaluation, Authorisation and Restriction of Chemicals.
Resp.: Respiratory.

Sens.: Sensitization.
STEL value: Short Term Exposure Limit value.
STOT RE: Specific target organ toxicity — repeated exposure.
STOT SE: Specific target organ toxicity — single exposure.
STOT: Specific Target Organ Toxicity.
STP: Sewage Treatment Plant.
SU: Sector of use.
Tox.: Toxicity.
TWA value: Time Weighted Average value.
vPvB: Very Persistent and Very Bioaccumulative.

16.3 Notice to reader

All information, instructions and statements contained in this Material Safety Data Sheet are compiled in accordance with European Directives, corresponding national legislation and on the basis of information given by our suppliers.
The information disclosed in this Material Safety Data Sheet (which supersedes all previous versions) is believed to be correct, at the date of issue, to the best of our current knowledge and experience. It only relates to the specific product designated herein and it may not be valid when said product is used in combination with any other products or in any processed form, unless specified in the text. This document aims to provide the necessary health and safety information of the product and is not to be considered a warranty or quality specification. It is the responsibility of the recipient of this Material Safety Data Sheet to ensure that information given here is read and understood by all who use, handle, dispose of or in any way come in contact with the product.
Also, it is the responsibility of the user to comply with local legislation relating to safety, health, environment and waste management. Data and information provided concerning the product are informative, exclusively presented to the customer.