Safety Data Sheet

acetylene (dissolved)

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: EST-C2H2-001
Issue date: 2/14/2023 Revision date: 6/13/2025 Supersedes version of: 2/14/2023 Version: 2.0

Danger

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

1.1. Product identifier

Trade name	:	acetylene (dissolved)
SDS no	:	EST-C2H2-001
Other means of identification	:	acetylene (dissolved)
	CAS-No.	: 74-86-2
	EC-No.	: 200-816-9
	EC Index-No.	: 601-015-00-0
REACH registration No	:	01-2119457406-36
Chemical formula	:	C2H2

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

Relevant identified uses	:	See the list of identified uses and exposure scenarios in the annex of the safety data sheet. Consumer use. Perform risk assessment prior to use.
Uses advised against	:	None.

1.3. Details of the supplier of the safety data sheet

Elme Messer Gaas AS
Kopli 103
11712 Tallinn
Estonia
T +372 6102001
info@elmemesser.ee, www.elmemesser.ee

1.4. Emergency telephone number

Emergency telephone number	:	Mürgistusteabekeskus, Terviseamet: tel. 16662, (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1A, Chemically unstable gas A	H220;H230
	Gases under pressure : Dissolved gas	H280

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS04

Signal word (CLP) : Danger

Hazard statements (CLP)	:	H220 - Extremely flammable gas. H280 - Contains gas under pressure; may explode if heated. H230 - May react explosively even in the absence of air.
Precautionary statements (CLP)		
- Prevention	:	P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response	:	P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - In case of leakage, eliminate all ignition sources.
- Storage	:	P403 - Store in a well-ventilated place.
Supplemental information	:	Dispose of cylinder via gas supplier only. Cylinder contains a porous material which in some cases contains asbestos fibres.

2.3. Other hazards

Asphyxiant in high concentrations.
These high concentrations are within the flammability range.
Not classified as PBT or vPvB.
The substance/mixture has no endocrine disrupting properties.
Not classified as PMT or vPvM.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
acetylene (dissolved)	CAS-No.: 74-86-2 EC-No.: 200-816-9 EC Index-No.: 601-015-00-0 REACH registration No: 01-2119457406-36	100	Flam. Gas 1A - Chem. Unst. Gas A, H220;H230 Press. Gas (Diss.), H280

For safety reasons, the acetylene is dissolved in acetone (Flam. Liq. 2, Eye Irrit. 2, STOT SE 3) or dimethylformamide (Flam.Liq.3, Repr. 1B, Acute Tox. 4, Eye Irrit. 2) 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.
Dimethylformamide is on the Candidate List of Substances of Very High Concern (SVHC) and is subject to restrictions on its use.(Annex XVII of Reach).
The cylinder contains a porous material which in some cases contains asbestos fibres. Asbestos is subject to restrictions on its use (Annex XVII of REACH). The asbestos fibres are encapsulated in the solid porous material and are not released under normal conditions of use. See section 13 for the disposal of those cylinders.
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

- Inhalation	:	Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact	:	Adverse effects not expected from this product.
- Eye contact	:	Adverse effects not expected from this product.
- 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.
See section 11.

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

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
Dry powder.
Carbon dioxide.
Shutting off the source of the gas is the preferred method of control.
Be aware of the risk of formation of static electricity with the use of CO2 extinguishers. Do not use them in places where a flammable atmosphere may be present.

- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : Carbon monoxide.

5.3. Advice for firefighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Continue water spray from protected position until container stays cool.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 469 - Protective clothing for firefighters. Standard EN 659 - Protective gloves for firefighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Act in accordance with local emergency plan.
Try to stop release.
Evacuate area.
Eliminate ignition sources.
Ensure adequate air ventilation.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment.

For emergency responders	:	Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. See section 5.3 of the SDS for more information.

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

Safe use of the product	:	Take precautionary measures against static discharge. Keep away from ignition sources (including static discharges). Avoid contact with pure copper, mercury, silver and brass with greater than 65% copper. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Purge air from system before introducing gas. Do not smoke while handling product. Avoid suck back of water, acid and alkalis. Only experienced and properly instructed persons should handle gases under pressure. Ensure the complete gas system was (or is regularily) checked for leaks before use. Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment. Solvent may accumulate in piping systems. Prior to maintenance activities, perform a risk assessment based on the solvent in use. In case of DMF, take into account the conditions of its restrictions. Consider the use of only non-sparking tools. The product must be handled in accordance with good industrial hygiene and safety procedures. Operating pressure in piping should be limited to 1.5 bar (gauge) or less due to more stringent national regulations (with maximum diameter DN25). Consider the use of flash back arrestors. For further information on safe use refer to EIGA code of practice acetylene (EIGA Doc 123). Consider pressure relief device(s) in gas installations. Do not breathe gas. Avoid release of product into work area. Ensure equipment is adequately earthed.

Safe handling of the gas receptacle : Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.
Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect containers from physical damage; do not drag, roll, slide or drop.
Do not remove or deface labels provided by the supplier for the identification of the content of the container.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps, when provided, 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.
If user experiences any difficulty operating 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 to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.

7.2. Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well ventilated place.
Segregate from oxidant gases and other oxidants in store.
Stored containers should be periodically checked for general condition and leakage.
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 them from falling over.
Container valve guards or caps, when provided, 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 a potentially explosive atmosphere.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL (Derived-No Effect Level) : None established.

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Product to be handled in a closed system.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when toxic gases may be released.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

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:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear safety glasses with side shields.
Standard EN 166 - Personal eye-protection - specifications.
Standard EN ISO 16321-1 - Eye and face protection for occupational use Part 1: General requirements.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher.
Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.

- Other : Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN 1149-5 - Protective clothing: Electrostatic properties.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Consult respiratory device supplier´s product information for the selection of the appropriate device.

• Thermal hazards : Wear goggles with suitable filter lenses when use is cutting/welding.

8.2.3. Environmental exposure controls

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

Appearance		
- Physical state at 20°C / 101.3kPa	:	Gas.
- Colour	:	Colourless.
Odour	:	Poor warning properties at low concentrations. Garlic like.
Melting point / Freezing point	:	-80.8 °C
Boiling point	:	-84 °C
Flammability	:	Extremely flammable gas.
Lower explosion limit	:	2.3 vol %
Upper explosion limit	:	100 vol %
Flash point	:	Not applicable for gases and gas mixtures.
Auto-ignition temperature	:	305 °C
Decomposition temperature	:	Not applicable.
pH	:	Not applicable for gases and gas mixtures.
Viscosity, kinematic	:	No reliable data available.
Water solubility [20°C]	:	1185 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	0.37
Vapour pressure [20°C]	:	44 bar(a)
Vapour pressure [50°C]	:	Not applicable.
Density and/or relative density	:	Not applicable for gases and gas mixtures.
Relative vapour density (air=1)	:	0.9

Particle characteristics	:	Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Oxidising properties	:	No oxidising properties.
- Coefficient of oxygen equivalency (Ci)	:	Not applicable.
Critical temperature [°C]	:	35 °C

9.2.2. Other safety characteristics

Molar mass	:	26 g/mol
Other data	:	None.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Dissolved in a solvent supported in a porous mass.
Stable under recommended handling and storage conditions (see section 7).
May react explosively even in the absence of air.

10.3. Possibility of hazardous reactions

May decompose violently at high temperature and/or pressure or in the presence of a catalyst.
Can form explosive mixture with air.
May react violently with oxidants.
May react explosively even in the absence of air.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Avoid moisture in installation systems.
High temperature.
High pressure.

10.5. Incompatible materials

Forms explosive acetylides with copper, silver and mercury.
Do not use alloys containing more than 65% copper.
Air, Oxidisers.
For additional information on compatibility refer to ISO 11114.
Do not use alloys containing more than 43% silver.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	:	There are no data on oral and dermal toxicity (studies are not technically feasible as the substance is a gas at room temperature.
Skin corrosion/irritation	:	No known effects from this product.
Serious eye damage/irritation	:	No known effects from this product.
Respiratory or skin sensitisation	:	No known effects from this product.

Germ cell mutagenicity	:	No known effects from this product.
Carcinogenicity	:	No known effects from this product.
Toxic for reproduction : Fertility	:	No known effects from this product.
Toxic for reproduction : unborn child	:	No known effects from this product.
STOT-single exposure	:	No known effects from this product.
STOT-repeated exposure	:	No known effects from this product.
Aspiration hazard	:	Not applicable for gases and gas mixtures.

11.2. Information on other hazards

Other information	:	The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment	:	Classification criteria are not met.
EC50 48h - Daphnia magna [mg/l]	:	242 mg/l
EC50 72h - Algae [mg/l]	:	57 mg/l
LC50 96 h - Fish [mg/l]	:	545 mg/l

12.2. Persistence and degradability

Assessment	:	Will rapidly degrade by indirect photolysis in air. Will not undergo hydrolysis.

12.3. Bioaccumulative potential

Assessment	:	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). See section 9.

12.4. Mobility in soil

Assessment	:	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment	:	Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment	:	The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects	:	Not classified as PMT or vPvM.
Effect on the ozone layer	:	No effect on the ozone layer.
Effect on global warming	:	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Do not discharge into any place where its accumulation could be dangerous.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.eu for more guidance on suitable disposal methods.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
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.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended)	:	16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

Dispose of cylinder via gas supplier only. Cylinder contains a porous material which in some cases contains asbestos fibres and is saturated with a solvent (acetone or dimethylformamide). External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No. : 1001

14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : ACETYLENE, DISSOLVED

Transport by air (ICAO-TI / IATA-DGR) : Acetylene, dissolved

Transport by sea (IMDG) : ACETYLENE, DISSOLVED

14.3. Transport hazard class(es)

Labelling :

2.1 : Flammable gases.

Transport by road/rail/inland waterways (ADR/RID/ADN)

Class : 2

Classification code : 4F

Hazard identification number : 239

Tunnel Restriction : B/D - Tank carriage: Passage forbidden through tunnels of category B, C, D and E. Other carriage: Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 2.1

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.1

Emergency Schedule (EmS) - Fire : F-D

Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail/inland waterways (ADR/RID/ADN) : Not applicable.

Transport by air (ICAO-TI / IATA-DGR) : Not applicable.

Transport by sea (IMDG) : Not applicable.

14.5. Environmental hazards

Transport by road/rail/inland waterways (ADR/RID/ADN) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail/inland waterways (ADR/RID/ADN) : P200.

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft : Forbidden.

Cargo Aircraft only	:	200.
Transport by sea (IMDG)	:	P200.

Special transport precautions : 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 there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU-Regulations

Restrictions on use	:	None.
Other information, restriction and prohibition regulations	:	Not listed on the PIC list (Regulation EU 649/2012). Not listed on the POP list (Regulation EU 2019/1021).
Seveso Directive : 2012/18/EU (Seveso III)	:	Listed.

National regulations

Regulatory reference : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms	:	ATE - Acute Toxicity Estimate. CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008. REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006. EINECS - European Inventory of Existing Commercial Chemical Substances. CAS# - Chemical Abstract Service number. PPE - Personal Protection Equipment. LC50 - Lethal Concentration to 50 % of a test population. RMM - Risk Management Measures. PBT - Persistent, Bioaccumulative and Toxic. vPvB - Very Persistent and Very Bioaccumulative. STOT- SE : Specific Target Organ Toxicity - Single Exposure. CSA - Chemical Safety Assessment. EN - European Standard. UN - United Nations. ADR - Agreement concerning the International Carriage of Dangerous Goods by Road. IATA - International Air Transport Association. IMDG code - International Maritime Dangerous Goods. RID - Regulations concerning the International Carriage of Dangerous Goods by Rail. WGK - Water Hazard Class. STOT - RE : Specific Target Organ Toxicity - Repeated Exposure. UFI : Unique Formula Identifier. ADN -International Carriage of Dangerous Goods by Inland Waterways. PROC -Process category . ERC – Environmental release category. PMT - Persistent, Mobile and Toxic. vPvM – very Persistent and very Mobile.
Training advice	:	Ensure operators understand the flammability hazard.
Further information	:	Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at http://www.Eiga.eu .

Full text of H- and EUH-statements	
Flam. Gas 1A - Chem. Unst. Gas A	Flammable gases, Category 1A, Chemically unstable gas A
Press. Gas (Diss.)	Gases under pressure : Dissolved gas
H220	Extremely flammable gas.
H230	May react explosively even in the absence of air.
H280	Contains gas under pressure; may explode if heated.

DISCLAIMER OF LIABILITY	:	Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. 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.

Annex to the safety data sheet

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