SECTION 1. Product and company identification

1.1. Product identifier

- **Product form**: Substance
- **Trade name**: Acetylene
- **Chemical name**: Acetylene
- **CAS-No.**: 74-86-2
- **Formula**: C2H2
- **Other means of identification**: Acetylen, ethine, ethyne, narcylene

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

- **Use of the substance/mixture**: Industrial use; Use as directed.

1.3. Details of the supplier of the safety data sheet

Linde Inc.
10 Riverview Drive
Danbury, CT 06810-6268, USA
www.lindeus.com
Linde Inc. 1-844-44LINDE (1-844-445-4633)

1.4. Emergency telephone number

- **Emergency number**: Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week
— Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887
(collect calls accepted, Contract 17729)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

- **GHS US classification**
  - Simple asphyxiating (SIA)
  - Flam. Gas 1 (H220)
  - Press. Gas (Diss.) (H280)

2.2. Label elements

- **GHS US labeling**
  - Hazard pictograms (GHS US)
  - Signal word (GHS US): Danger
  - Hazard statements (GHS US): 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
  - OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION
  - CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR

- **Precautionary statements (GHS US)**
  - 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. Heat, Open flames, Sparks, Hot surfaces
  - P271+P403 - Use and store only outdoors or in a well-ventilated place.
  - P377 - LEAKING GAS FIRE: Do not extinguish, unless leak can be stopped safely.
  - P381 - Eliminate all ignition sources if safe to do so.
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P501 - Dispose of contents/container in accordance with container Supplier/owner instructions
CGA-PG05 - Use a back flow preventive device in the piping.
CGA-PG06 - Close valve after each use and when empty.
CGA-PG10 - Use only with equipment rated for cylinder pressure.
CGA-PG12 - Do not open valve until connected to equipment prepared for use.
CGA-PG20 - Use only with equipment of compatible materials of construction and rated for cylinder pressure.
CGA-PG13 - Fusible plugs in the top, bottom, or valve melt at 98 °C to 107 °C (208 °F to 224 °F). Do not discharge at pressures above 15 psig (103 kPa).
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

2.3. Other hazards
Other hazards which do not result in classification:
For safety reasons, the acetylene is dissolved in acetone (CAS # 67-66-2; Flam. Liq. 2, Eye Irrit. 2, STOT SE 3) in the gas container. Vapor of the solvent is carried away as impurity when the acetylene is extracted from the gas container. The concentration of the solvent vapor in the gas is lower than the concentration limits to change the classification of the acetylene.

2.4. Unknown acute toxicity (GHS US)
No data available

SECTION 3: Composition/Information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylene, dissolved</td>
<td>(Main constituent)</td>
<td>100</td>
</tr>
</tbody>
</table>

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after skin contact: The liquid may cause frostbite. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately. Get immediate medical attention.

First-aid measures after ingestion: Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed
No additional information available

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

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media: See below. See CGA Pamphlet SB-4, Handling Acetylene Cylinders in Fire Situations, for further information.
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5.2. Special hazards arising from the substance or mixture

Fire hazard: EXTREMELY FLAMMABLE GAS. If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.

Explosion hazard: EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.
Reactivity: No reactivity hazard other than the effects described in sub-sections below.

5.3. Advice for firefighters

Firefighting instructions: Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Protection during firefighting: Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters: Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Specific methods: Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Stop flow of product if safe to do so.
Use water spray or fog to knock down fire fumes if possible.
Continue water spray from protected position until container stays cool.

Other information: Acetylene containers are provided with pressure relief devices designed to vent contents when exposed to elevated temperature.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Evacuate area. Ensure adequate ventilation. Stop leak if safe to do so.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store only where temperature will not exceed 125°F (52°C). Post “No Smoking/No Open Flames” signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

Storage area: Acetylene trailers are designed and intended for outdoor use. Acetylene storage in excess of 2,500 cu ft (70.79 cubic meters) is prohibited in buildings and other occupancies.

7.3. Specific end use(s)
None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Acetylene, dissolved (74-86-2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>Not established</td>
</tr>
<tr>
<td>USA OSHA</td>
<td>Not established</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: An explosion-proof local exhaust system or a mechanical system is acceptable if it can prevent oxygen deficiency and keep hazardous fumes and gases below all applicable exposure limits in the worker's breathing area. During welding, ensure that there is adequate ventilation to keep worker exposure below applicable limits for fumes, gases, and other by-products of welding. Do not breathe fumes or gases. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes, or may cause other similar discomfort.

Eye protection: Wear safety glasses with side shields.
Skin and body protection: As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder’s gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.

Respiratory protection: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection: Wear cold insulating gloves when transfilling or breaking transfer connections.

Environmental exposure controls: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information: Consider the use of flame resistant anti-static safety clothing. Wear leather safety gloves and safety shoes when handling cylinders.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Gas
Appearance: Colorless, odorless gas.
Molecular mass: 26 g/mol
Color: Colorless.
Odor: Garlic like. Poor warning properties at low concentrations.
Odor threshold: No data available
pH: Not applicable.
Relative evaporation rate (butyl acetate=1): No data available
Relative evaporation rate (ether=1): Not applicable.
Melting point: -80.8 °C (-113.4°F)
Freezing point: -17 °C (1.4°F)
Boiling point: -84 °C (-119.2°F)
Flash point: -17 °C (1.4°F)
Critical temperature: 36 °C (97°F)
Auto-ignition temperature: 305 °C (581°F)
Decomposition temperature: 635 °C (1175°F)
Flammability (solid, gas): 2.5 – 100 vol %
Vapor pressure: 44 bar (623 psig)
Critical pressure: 61.38 bar (875 psig)
Relative vapor density at 20 °C: No data available
Relative density: Not applicable.
Density: 0.0012 g/cm³ (at 0 °C)
Relative gas density: 0.9
Solubility: Water: 1185 mg/l
Partition coefficient n-octanol/water (Log Pow): 0.37
Partition coefficient n-octanol/water (Log Kow): Not applicable.
Viscosity, kinematic: Not applicable.
Viscosity, dynamic: Not applicable.
Explosive properties: None.
Oxidizing properties: None.
Explosion limits: No data available
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9.2. Other information
Sublimation point : -83.3 °C
Gas group : Press. Gas (Diss.)

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).

10.3. Possibility of hazardous reactions
May react explosively even in the absence of air. 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.

10.4. Conditions to avoid
High temperature. High pressure. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials
Forms explosive acetylides with copper, silver and mercury. Do not use alloys containing more than 65% copper. Air, Oxidizer. Do not use alloys containing more than 43% silver.

10.6. Hazardous decomposition products
Thermal decomposition or burning may produce carbon monoxide, carbon dioxide, and hydrogen. The welding and cutting process may form reaction products such as carbon monoxide and carbon dioxide. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : Not classified
Skin corrosion/irritation : Not classified
  pH: Not applicable.
Serious eye damage/irritation : Not classified
  pH: Not applicable.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : No known ecological damage caused by this product.

12.2. Persistence and degradability
Acetylene, dissolved (74-86-2)
Persistence and degradability : Will rapidly degrade by indirect photolysis in air. Will not undergo hydrolysis.
12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Acetylene, dissolved (74-86-2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition coefficient n-octanol/water (Log Pow)</td>
<td>0.37</td>
</tr>
<tr>
<td>Partition coefficient n-octanol/water (Log Kow)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>Not expected to bioaccumulate due to the low log Kow (log Kow &lt; 4). Refer to section 9.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Acetylene, dissolved (74-86-2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility in soil</td>
<td>No data available</td>
</tr>
<tr>
<td>Ecology - soil</td>
<td>Because of its high volatility, the product is unlikely to cause ground or water pollution</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects

Effect on ozone layer : No known effects from this product.
Effect on the global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

In accordance with DOT

- Transport document description (DOT) : UN1001 Acetylene, dissolved, 2.1
- UN-No.(DOT) : UN1001
- Proper Shipping Name (DOT) : Acetylene, dissolved
- Hazard labels (DOT) : 2.1 - Flammable gas

DOT Special Provisions (49 CFR 172.102) : N86 - UN pressure receptacles made of aluminum alloy are not authorized. N88 - Any metal part of a UN pressure receptacle in contact with the contents may not contain more than 65% copper, with a tolerance of 1%.

Additional information

- Emergency Response Guide (ERG) Number : 116 (UN1001)
- Other information : No supplementary information available.
- 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 cylinder 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.

Transport by sea

- UN-No. (IMDG) : 1001
- Proper Shipping Name (IMDG) : Acetylene, dissolved
- Class (IMDG) : 2 - Gases
- MFAG-No : 116

Air transport

- UN-No. (IATA) : 1001
- Proper Shipping Name (IATA) : Acetylene, dissolved
Acetylene, dissolved

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Class (IATA) : 2 - Gases
Civil Aeronautics Law : Gases under pressure/Gases flammable under pressure

SECTION 15: Regulatory information

15.1. US Federal regulations

Acetylene, dissolved (74-86-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.

15.2. International regulations

CANADA

Acetylene, dissolved (74-86-2)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Acetylene, dissolved (74-86-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.2.2. National regulations

Acetylene, dissolved (74-86-2)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Acetylene, dissolved(74-86-2)
U.S. - California - Proposition 65 - Carcinogens List No
U.S. - California - Proposition 65 - Developmental Toxicity No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male No
State or local regulations
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

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SECTION 16: Other information


Fumes and gases produced during welding and cutting processes can be dangerous to your health and may cause serious lung disease. KEEP YOUR HEAD OUT OF FUMES. DO NOT BREATHE FUMES AND GASES. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes; or may cause other similar discomfort. Contaminants in the air may add to the hazard of fumes and gases.

When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Inc, it is the user’s obligation to determine the conditions of safe use of the product.

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NFPA health hazard : 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.
NFPA fire hazard : 4 - Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.
NFPA instability : 2 - Materials that readily undergo violent chemical change at elevated temperatures and pressures.

SDS US (GHS HazCom 2012) - Praxair OR Linde

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.