

**Acetylene, Dissolved**

**1 PRODUCT AND COMPANY IDENTIFICATION**

**Product Identifier:** Acetylene, Dissolved  
**Common Name:** Acetylene  
**SDS Number:** 12  
**Revision Date:** 10/21/2015  
**Version:** 2.0  
**CAS Number:** 74-86-2  
**Chemical Formula:** C<sub>2</sub>H<sub>2</sub>  
**Product Use:** Industrial Use  
**Supplier Details:** Roberts Oxygen Company, Inc.  
 P.O. Box 5507  
 Rockville, MD 20855

**Emergency:** Chemtrec: 24 hr/day 7 days/wk (800) 424-9300: for spills, leaks, fire, exposure or accidents involving this product  
**Phone:** Customer Service: (301) 948-8100, Mon through Fri from 7:30 am to 5:00 pm ET  
**Web:** www.robertsoxygen.com

**2 HAZARDS IDENTIFICATION**

**Classification of the substance or mixture**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):**

- Physical, Flammable Gases, 1
- Physical, Flammable Gases, B
- Physical, Gases Under Pressure, Dissolved Gas

**GHS Label elements, including precautionary statements**

**GHS Signal Word:** DANGER

**GHS Hazard Pictograms:**



**GHS 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
- OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.
- CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR.

**GHS Precautionary Statements:**

- P202 - Do not handle until all safety precautions have been read and understood.
- P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
- P271+P403 - Use only outdoors or in a well-ventilated area.
- P377 - Leaking gas fire: Do not extinguish unless leak can be stopped safely.
- P381 - Eliminate all ignition sources if safe to do so.
- P501 - Dispose of contents/container in accordance with section 13
- P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P313 - Get medical advice/attention.
- CGA-PG05 - Use a back flow preventive device in the piping.
- CGA-PG13 - Fusible plugs in top, bottom, or valve melt at 98 °C to 107 °C (208 °F to 224 °F). Do not discharge at pressures above 15 psi (103 kPa).
- CGA-PG06 - Close valve after each use and when empty.
- CGA-PG11 - Never put cylinders into unventilated areas of passenger vehicles.

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CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).  
 CGA-PG27 - Read and follow the Safety Data Sheet (SOS) before use.  
 OSHA-PG01 - DO NOT REMOVE THIS PRODUCT LABEL (or equivalent wording).

**Hazards not otherwise classified (HNOC) or not covered by GHS**

When using this product in welding and cutting, read and understand the manufacturer's instructions and the precautionary label on the product. For additional information regarding welding and cutting safety, contact the American Welding Society (AWS) [www.aws.org](http://www.aws.org) and request the publication "Safety in Welding, Cutting, and Allied Processes." Refer to NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hotwork.

**3 COMPOSITION/INFORMATION ON INGREDIENTS**

**Ingredients:**

Cas#	%	Chemical Name
74-86-2	100%	Acetylene, dissolved

**4 FIRST AID MEASURES**

**Inhalation:** Remove to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.

**Skin Contact:** 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 howering with warm water. Seek medical evaluation and treatment as soon as possible.

**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. Get immediate medical attention.

**Ingestion:** Ingestion is not considered a potential route of exposure.

**Symptoms and Effects, Acute and Delayed:**

Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness, and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death. Depending on concentration and duration of exposure to carbon dioxide may cause increased respirations, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure become more apparent when atmospheric oxygen is decreased to 15-17%. Contact with liquid may cause cold burns/frostbite.

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**5 FIRE FIGHTING MEASURES**

**Flammability:** 2.5 - 100 vol %  
**Flash Point:** N/a  
**Flash Point Method:** N/a  
**Burning Rate:** N/a  
**Autoignition Temp:** N/a  
**LEL:** N/a

**Fire Fighting 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.

Compressed gas: Asphyxiant, suffocation hazard by lack of oxygen

Standard Protective Clothing and Equipment: SCBA for fire fighters

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.

**6 ACCIDENTAL RELEASE MEASURES**

Stop the release or leak if safe to do so.

Evacuate the area.

Wear self-contained breathing apparatus (SCBA) when entering area, unless the atmosphere is proven to be safe.

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**HANDLING AND STORAGE****Handling Precautions:**

Acetylene cylinders are heavier than other cylinders because they are packed with a porous filler material and acetone or dimethylformamide. Never use acetylene in excess of 15 psig pressure. Ensure adequate ventilation. Solvent may accumulate in piping systems. For maintenance activities use appropriate resistant gloves, assess the necessity to use a respiratory filter device (specify gloves and filters for DMF or acetone use), and wear safety goggles. Avoid breathing the vapor of the solvent. Provide adequate ventilation. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122°F). Only experienced and properly instructed persons should handle compressed gases/cryogenic liquids.

Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Open valve slowly. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Close valve after each use and when empty. Replace outlet caps or plugs and container caps as soon as container is disconnected from equipment. Do not subject containers to abnormal mechanical shock. Never attempt to lift a cylinder by its valve protection cap or guard. Do not use containers as rollers or supports or for any other purpose than to contain the gas as supplied. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Do not smoke while handling product or cylinders. Never re-compress a gas or a gas mixture without first consulting the supplier. Never attempt to transfer gases from one cylinder/container to another. Always use backflow protective device in piping. Purge air from system before introducing gas. When returning cylinder install valve outlet cap or plug leak tight. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C (122°F). All piped systems and associated equipment must be grounded.

For additional handling recommendations, consult Compressed Gas Association's Pamphlet P-1.

**Storage Requirements:**

Store only where temperature will not exceed 125°F (52°C). Post "No Smoking or 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 additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1.

Acetylene storage in excess of 2,500 cu ft is prohibited in buildings and other occupancies.

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**8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

**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.

**Personal Protective Equipment:** Eye Protection: Safety spectacles with unperforated sideshields

Skin and Body Protections: 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 welders gloves and protective goggles, and may include arm protection, aprons, hats and shoulder protections as well as fire-protected clothing

Respiratory Protections: 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 (e.g., an organic vapor cartridge). 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.

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

Acetylene (74-86-2) Exposure Limits:  
 OSHA (TWA/PEL): Not Specified  
 ACGIH (TWA/TLV): Not Specified  
 NIOSH: 2500 ppm

**9 PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Colorless gas	<b>Odor:</b>	Garlic like
<b>Physical State:</b>	Dissolved Gas	<b>Molecular Formula:</b>	C <sub>2</sub> H <sub>2</sub>
<b>Odor Threshold:</b>	Not applicable	<b>Solubility:</b>	Water: 1185 mg/l
<b>Particle Size:</b>	Not applicable	<b>Softening Point:</b>	Not applicable
<b>Spec Grav./Density:</b>	0.07314 lbs/ft <sup>3</sup>	<b>Percent Volatile:</b>	Not applicable
<b>Viscosity:</b>	Not applicable	<b>Heat Value:</b>	Not applicable
<b>Sat. Vap. Conc.:</b>	Not applicable	<b>Freezing/Melting Pt.:</b>	No data available
<b>Boiling Point:</b>	-84 °C	<b>Flash Point:</b>	No data available
<b>Flammability:</b>	2.5-100 vol%	<b>Octanol:</b>	Not applicable
<b>Partition Coefficient:</b>	Not applicable	<b>Vapor Density:</b>	No data available
<b>Vapor Pressure:</b>	4400 kPa	<b>VOC:</b>	Not applicable
<b>pH:</b>	Not applicable	<b>Bulk Density:</b>	Not applicable
<b>Evap. Rate:</b>	Not applicable	<b>Auto-Ignition Temp:</b>	305 °C
<b>Molecular weight:</b>	26.04g/mol	<b>UFL/LFL:</b>	Not applicable
<b>Decomp Temp:</b>	635 °C		

Sublimation point: -83.3 °C

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**STABILITY AND REACTIVITY**

<b>Stability:</b>	Stable as shipped. Do not use at pressure above 15 psig.
<b>Conditions to Avoid:</b>	Under certain conditions, acetylene can react with copper, silver, and mercury to form acetylides, compounds which can act as ignition sources. Brasses containing less than 65% copper in the alloy and certain nickel alloys are suitable for acetylene service under normal conditions. Acetylene can react explosively when combined with oxygen and other oxidizers including all halogens and halogen compounds. The presence of moisture, certain acids, or alkaline materials tends to enhance the formation of copper acetylides. Oxygen. Oxidizing agents.
<b>Materials to Avoid:</b>	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.
<b>Hazardous Decomposition:</b>	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 originates from the volatilization, reaction or oxidation of the material being worked.
<b>Hazardous Polymerization:</b>	None

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**TOXICOLOGICAL INFORMATION**

Acute Oral Toxicity: No data is available on the product itself.  
 Inhalation: No data is available on the product itself.  
 Acute Dermal Toxicity: No data is available on the product itself.  
 Skin corrosion/irritation: No data available  
 Serious eye damage/eye irritation: No data available  
 Sensitization: No data available

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**ECOLOGICAL INFORMATION**

Persistence and degradability: Will rapidly degrade by indirect photolysis in air. Will not undergo hydrolysis.  
 Bioaccumulative potential:  
     Log Pow - 0.37  
     Log Kow - Not applicable  
     Bioaccumulative potential- Not expected to bioaccumulate due to the low log Kow (log Kow < 4)  
 Mobility in soil: No data available  
 Ecology in soil: Because of its high volatility, the product is unlikely to cause ground or water pollution.  
 Effect on ozone layer: No known effects from this product  
 Effect on the global warming: No known effects from this product

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**DISPOSAL CONSIDERATIONS**

Waste treatment methods:  
 May be vented to atmosphere in a well-ventilated place. Do not discharge into any place where its accumulation could be dangerous.  
 Waste disposal recommendations:  
 Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

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**14 TRANSPORT INFORMATION**

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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 cylinders, ensure there is adequate ventilation. Ensure that cylinders are firmly secured. Ensure cylinder valve is closed and not leaking. Ensure valve outlet cap (where provided) is correctly fitted. Ensure valve protection device (where provided) is correctly fitted.

**15 REGULATORY INFORMATION**

Component (CAS#) [%] - CODES

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Acetylene, dissolved (74-86-2) [100%] MASS, NJHS, PA, TSCA, TXAIR

Regulatory CODE Descriptions

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MASS = MA Massachusetts Hazardous Substances List  
NJHS = NJ Right-to-Know Hazardous Substances  
PA = PA Right-To-Know List of Hazardous Substances  
TSCA = Toxic Substances Control Act  
TXAIR = TX Air Contaminants with Health Effects Screening Level

**16 OTHER INFORMATION**

The information contained in this Safety Data Sheet is believed reliable, based on technical information and industry experience. Roberts Oxygen Company, Inc. provides no warranties or guarantees pertaining to the information provided in connection with the safety suggestions made. Moreover it should not be assumed that every acceptable safety procedure, precaution, or device is listed. Abnormal or unusual circumstances may warrant or suggest further requirements or additional precautions. Roberts Oxygen Company, Inc. requests Users to thoroughly review this SDS and become aware of the product hazards and safety information. It is the User's responsibility to determine the conditions for safe use of the product and to confirm the compatibility of any other materials in their use or processes that come in contact with this product.

User acknowledges that the chemicals listed may be hazardous and must be handled accordingly. User further acknowledges its understanding that the chemicals listed may be classified by OSHA as hazardous chemicals, and that there are hazards associated with the possession, transportation and use of the chemical(s), containers, and related equipment and that the User must take proper account of those hazards and deal with them appropriately.

User shall warn all persons who may be exposed to any hazards relating to the chemical(s), containers, and related equipment. User acknowledges that the Seller has supplied the User with all relevant (Material) Safety Data Sheets (SDS) relating to the Products, and that additional copies of the SDS are available on request. OSHA regulations require User to develop and implement a written chemical hazard communications program for its employees regarding all hazardous chemicals.

Further, federal, state and local regulations may exist that are not addressed.

