SECTION 1: Identification

1.1 Product Identifier

Trade name	Acetylene
MSDS No.	0002
Chemical description	Acetylene
CAS No.	74-86-2
EC No.	200-816-9
Chemical formula	C_2H_2
Synonyms	Acetylene, High Purity Acetylene

1.2 Relevant identified uses and uses advised against

Relevant identified uses	Test gas/Calibration gas, Laboratory use., Chemical reaction / Synthesis, Use as a fuel. Fuel gas for welding, cutting, heating, brazing and soldering applications. Contact supplier for more information on uses
Uses advised against	Industrial and professional. Perform risk assessment prior to use.

1.3 Details of the supplier

Name	Air Liquide New Zealand Limited
Address	19 Maurice Road, Penrose Auckland 1061, New Zealand
Phone	Phone: (09) 622 3880

1.4 Emergency telephone number

0800 156 516

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Hazardous Substances [Classification] Regulations 2001

HSNO classification(s) 2.1.1A - Extremely flammable gas
Explosive; fire, blast or projection hazard
Compressed Gases - Contains gas under pressure; may explode if heated

Physical Hazards

2.2 Label Elements

Hazard pictograms

Signal word Danger

Hazard statements
H280 - Contains gas under pressure; may explode if heated
H230 - Chemically Unstable gases
H220 - Extremely flammable gas

Precautionary statements

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 - Eliminate all ignition sources if safe to do so.

Storage
P403 - Store in a well ventilated place.

Disposal
None allocated

2.3 Other Hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1 Substance/Mixtures

Name	Chemical Formula	Percent (%)	Product Identifier
Acetylene (dissolved)	C_2H_2	100	(Cas No) 74-86-2
			(EC No) 200-816-9

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. Apply artificial respiration 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.
In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination.

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 — Water spray or fog.

Unsuitable extinguishing media — Carbon dioxide. Do not use water jet to extinguish.

5.2 Specific hazards arising for the substance or mixture

Specific hazards — Exposure to fire may cause containers to rupture/explode.
Supports combustion.

Hazardous combustion products — Incomplete combustion may form 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 reignition may occur. Extinguish any other fire.
Move containers away from the fire area if this can be done without risk.

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

Hazchem code — 2SE

2 Fine Water Spray Use fog or fine spray

S Risk of violent reaction or explosion. Wear full fire kit and breathing apparatus. Dilute spill and run-off. Use breathing apparatus

E Evacuate vicinity

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Try to stop release.
Evacuate area.
Monitor concentration of released product.
Eliminate ignition sources.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Act in accordance with local emergency plan.
Stay upwind.

6.2 Environmental precautions

Try to stop release.

6.3 Methods and material for containment and cleaning up

Ventilate area

6.4 References 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	The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid suck back of water, acid and alkalis. Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment. Purge air from system before introducing gas. Take precautionary measures against static discharge. Keep away from ignition sources (including static discharges). Consider the use of only non-sparking tools. Avoid contact with pure copper, mercury, silver and brass with greater than 65% copper. Do not use alloys containing more than 43% silver. 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. Solvent may accumulate in piping systems. For maintenance activities use appropriate resistant gloves, assess the necessity to use respiratory filter device (specify gloves and filters for DMF or acetone use) and wear safety goggles. Avoid breathing the vapour of the solvent. Provide adequate ventilation. For further information on safe use refer to EIGA code of practice acetylene (EIGA Doc 123). Do not breathe gas. Avoid release of product into atmosphere.
Safe handling of the gas receptacle	Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. 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. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water.

Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
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.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2 Conditions for safe storage, including any incompatibilities

General

Observe all regulations and local requirements regarding storage of containers
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Segregate from flammable gases and other flammable materials in store.
Store containers in a location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3 Specific use(s)

None

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

OEL (Occupational Exposure Limits)	No data available	
DNEL (Derived-No Effect Level)	Acute - systemic effects, inhalation	2675 mg/m³ 2500 ppm
	Long-term - systemic effects, inhalation	2675 mg/m³ 2500 ppm
PNEC (Predicted No-Effect Concentration	No data available	

8.2 Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Systems under pressure should be regularly checked for leakages.
Gas detectors should be used when flammable gases/vapours may be released.
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.
Consider the use of a work permit system e.g. for maintenance activities..

8.3 Individual protection measures

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:
Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/welding.
PPE compliant to the recommended EN/ISO standards should be selected.

Eye/face protection	Wear safety glasses with side shields.
Skin protection	Wear working gloves when handling gas containers. Consider the use of flame resistant safety clothing. Wear safety shoes while handling containers.
Respiratory protection	None necessary.
Thermal hazards	None necessary.

8.4 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 20°C/101.3kPa	Gas
Colour	Colourless
Odour	Garlic like. Poor warning properties at low concentrations.
Odour threshold	Odour threshold is subjective and inadequate to warn of overexposure.
pH value	Not applicable
Molar mass [g/mol]	26 g/mol
Melting point [°C]	-80.8 °C
Boiling point [°C]	-84 °C
Flash point [°C]	Not applicable for gases and gas mixtures.
Critical temperature [°C]	35 °C
Evaporation rate (ether=1)	Not applicable for gases and gas mixtures.
Flammability range	Non flammable
Vapour pressure [20°C]	Not applicable
Vapour pressure [50°C]	Not applicable
Relative density, gas (air=1)	0.9
Relative density, liquid (water=1)	Not applicable
Solubility in water [mg/l]	1185 mg/l
Partition coefficient n-octanol/water [log Kow]	0.37
Autoignition temperature	305 °C
Decomposition temperature	635 °C
Viscosity [20°C]	Not applicable
Explosive properties	Not applicable
Oxidising properties	None

9.2 Other information

None.

SECTION 10: Stability and reactivity

10.1 Reactivity

No reactivity hazard other than the effects described in subsections 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 violently with oxidants. Can form explosive mixture with air. 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. .

10.4 Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
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.
Do not use alloys containing more than 43% silver.
For additional information on compatibility refer to ISO 11114.

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 toxicological effects

Acute toxicity	Classification criteria are not met. Acetylene has low inhalation toxicity, the LOAEC for mild intoxication in humans with no residual effects is 100 000ppm (107,000 mg/m3). 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/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.
Specific target organ toxicity - Single exposure	No known effects from this product.
Specific target organ toxicity - Repeated exposure	No known effects from this product.
Aspiration hazard	Not applicable for gases and gas mixtures.

SECTION 12: Ecological information

12.1 Toxicity

Classification criteria are not met

12.2 Persistence and degradability

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

12.3 Bioaccumulative potential

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

12.4 Mobility in soil

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

12.5 Other adverse effects

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

SECTION 13: Disposal consideration

13.1 Waste treatment methods

Avoid discharge to atmosphere. 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. Ensure that the emission levels from local regulations or operating permits are not exceeded. 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.

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). .

SECTION 14: Transport information

2.1 Flammable gases

14.1 Land transport

Land Transport Rule: Dangerous Goods 2005: NZS 5433:2012

UN Number	1001
UN proper shipping name	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1
Packing group	Not applicable
Environmental hazards	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

14.2 Transport by sea

IMDG - International Maritime Dangerous Goods

UN Number	1001
UN proper shipping name	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1
Packing group	Not applicable
Environmental hazards	None
Emergency Schedule (EmS)	Fire F-C Spillage S-W

14.3 Transport by air

ICAO - International Civil Aviation Organisation/IATA - International Air Transport Association

UN Number	1001
UN proper shipping name	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1
Packing group	Not applicable
Environmental hazards	None

14.4 Special precautions for user

Hazchem code	2S
Special transport information	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: Ensure 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.

SECTION 15: Regulatory information

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

HSNO approval code HSR000987

Listed on the New Zealand Inventory of Chemicals (NZIoC)

15.2 Chemical safety assessment

A chemical safety assessment does not need to be carried out for this product.

SECTION 16: Other information

16.1 Indication of changes

Update to reflect GHS requirements

Date of first issue	May 2014
Revised date	April 2019
Superseeds	Version 9
Version	10

16.2 Training advice

Ensure operators understand the hazard of oxygen enrichment.

16.3 Full text of H-statements

H220	Extremely flammable gas
H230	May react explosively even in the absence of air
H280	Contains gas under pressure; may explode if heated

16.4 Cylinder features

Colour	AS4484-2004 Maroon
Valve outlet	AS2473 Type 20

16.5 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.