Material Safety Data Sheet

Acetylene (Dissolved)

Start date：2019/07/01
Revision date：2024/03/01
SDS NO：107
Version：V1.0.0.3

Section 1 Identification of the Substance and Supplier

Product name： Acetylene(dissolved)

Synonyms： Calcium carbide gas,Ethyne,Ethine

Chemical Formula： C_2H_2

CAS No.： 74 - 86-2

EC No.： 200-816-9

Recommended Uses： Industrial and professional.Perform risk assessment prior to use.Contact supplier for more information on uses.

Restrictions on Uses： Consumer use.

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Section 2 Hazards Identification

| Emergency Overview

Flammable and can form explosive gases when mixed with air.

| Hazard classification according to GHS

Flammable gas, Class 1, chemically unstable gas - Class A, gas under pressure - compressed gas.

| Label Elements

Hazard pictogram

Signal word：Danger

Hazard statements： Extremely flammable gas, gas under pressure, may explode when heated.

| Precautionary statements

Prevention： Do not handle until all safety precautions have been read and understood.Keep away from heat sources, sparks, open flames, and hot surfaces—— No Smoking.

Response： Leaking gas fire: Do not extinguish the fire unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage： Store in a well ventilated area

Disposal： Before disposal, national and local regulations should be consulted. Empty cylinders need to returned to the manufacturer.

| Hazard description

Physical and chemical hazards

Flammable and can form explosive gases when mixed with air. Gases containing pressure can explode if heated.

Health hazards

It has a weak anesthetic effect. Inhalation at high concentrations can cause simple asphyxia. Acute poisoning: When exposed to 20% concentration, obvious symptoms of hypoxia occur; Inhalation of high concentrations results in initial excitement, multilingualism, crying and laughing restlessness, followed by dizziness, headache, nausea, vomiting, ataxia, and lethargy; Serious cases include coma, cyanosis, disappearance of pupil response to light, and weak and irregular pulse. When mixed with phosphine and hydrogen sulfide, the toxicity increases, and attention should be paid.

Environmental hazards

Please refer to SDS Section 12.

Section 3 Composition/Information on Ingredients

☑Substance ☐Mixture

Chemical name	Concentration or concentration range	CAS No.
Acetylene	≥97.5	74 - 86-2

For safety reasons,the acetylene is dissolved in acetone(Flam.Liq.2,Eye Irrit.2,STOT SE3) or dimethylformamide (Flam.Liq.3,Repr.1B,Acute Tox.4,Eye Irrit.2) in the gas receptacles.Vapour of the solvent is carried away as impurity when the accetylene is extracted from the gas receptacle.The cylinder contains a porous material which in some cases contains asbestos fibre.The asbestos fibre 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. Dimethylformamide is on the Candidate list of Substances of Very High Concern(SVHC) that might be subject to authorization for future placing on the market and uses.

Contains no other components or impurities which will influence the classification of the product.

Section 4 First Aid Measures

| General advice

Skin contact： -Adverse effects not expected from this product.

Eye contact： -Adverse effects not expected from this product.

Inhalation： Move the patient to fresh air and keep breathing smooth. If breathing is difficult, give oxygen. If breathing or heartbeat stops, perform cardiopulmonary resuscitation immediately. Get medical attention immediately.

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

Section 5 Firefighting Measures

| Hazard characteristics

Extremely flammable and explosive, which can form an explosive mixture when mixed with air and explode when exposed to heat or open flame. "Gas is lighter than air, and when used and stored indoors, it is difficult to expel gas as it rises and remains on the roof, causing an explosion when it encounters sparks.". React violently in contact with oxidizing agents. Contact with fluorine, chlorine, etc. can cause severe chemical reactions. It can form explosive substances with compounds such as copper, silver, and mercury. Containers may crack and explode when exposed to fire or high temperature heating.

| Extinguishing method and media

Suitable extinguishing media: spray water or fog, dry powder.

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

| Fire precautions and measures

If possible,stop flow of product. Cut off the air supply while ensuring personal safety. Evacuees should stay away from the fire disaster area and evacuate upwind. Isolate the fire area and prohibit unrelated personnel from entering. Use water spray of 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 containers stays cool. If possible, transfer those cylinders that are located near the fire area and not directly affected by the fire to a safe location. After the fire is resolved, gas cylinders that have been subjected to a fire should not be used and should be returned to Yigas Company.

| Special protective equipment (suitable for firefighters)

Full body fireproof clothing. In confined spaces, positive pressure self-contained breathing apparatus must be worn.

Section 6 Accidental Release Measures

| Personal precautions,protective equipment and emergence procedures

Try to stop release. Quickly evacuate personnel from the affected area and designate a warning area based on the area affected by gas diffusion. Trained emergency personnel shall handle the emergency according to procedures, wear positive pressure self-contained breathing apparatus, and wear anti-static clothing. Wear cold clothing when liquefied gas leaks. Determine the location and degree of leakage, and cut off the source of leakage while ensuring personal safety. Isolate the leak area until the gas has dissipated. Do not discharge gas to places with poor ventilation, airtight conditions, or fire hazards.

| Environmental precautions

-Try to stop release.

| Methods and materials for containment and cleaning up

Please pay attention to local waste disposal regulations and return the substance and its container to our company for disposal. Contact the supplier to confirm any special requirements.

Section 7 Handling and storage

| Precautions for handling

1. Operate in a well ventilated area and wear suitable personal protective equipment (see "Part VIII"). Smoking is strictly prohibited in the workplace.

2.All operators and users must receive training on how to operate safely and strictly abide by operating procedures.

3. When handling gas cylinders

a) Properly fix gas cylinders to prevent dumping or impact, and prevent damage to gas cylinders and accessories.

b) The cylinder valve should be opened slowly and the gas flow rate should not be too fast.

c) If the cylinder valve is damaged or cannot be opened by hand, it is not allowed to forcibly open it with tools such as a wrench. Instead, the cylinder should be returned to the supplier with a label that briefly states the reason why the cylinder cannot be used;

e) When the use of a gas cylinder is interrupted or temporarily interrupted, the cylinder valve should be fully closed;

f) A certain amount of residual pressure should be left in the cylinder to prevent external gas from flowing back;

g) After use, close the bottle valve and attach the bottle cap.

4. Safety precautions during handling and loading/unloading

a) Personnel handling and loading/unloading gas cylinders should at least wear anti impact shoes;

b) When loading and unloading gas cylinders, they should be loaded and unloaded gently, and the cylinder cap should be worn properly. Do not drag, throw, invert, etc;

c) It is prohibited to use electromagnetic cranes and chain ropes to bind or use bottle valves as lifting points.

| Precautions for storage

a) Acetylene is usually packaged by dissolving it in a solvent and porous material and filling it into a steel cylinder.

b) Store in a dry, cool, and ventilated place. Keep away from fire, heat, corrosive substances, and direct sunlight. Store separately from oxygen, compressed air, halogen (fluorine, chlorine, bromine), etc.

c) Provide corresponding types and quantities of fire-fighting equipment. Take anti-static measures.

b) Gas cylinders should be placed upright and properly fixed to prevent tipping or collision with each other; Empty and full bottles should be placed separately and clearly marked;

c) The principle of using cylinders that are stored first is adopted to avoid excessive storage time for full cylinders.

Section 8 Exposure Control/Personal Protection

| Control parameters

Occupational exposure limits

Simple Asphyxiant

Biological limit

No data available.

Monitoring methods

Gas detection tube method, gas chromatography, cuprous acetylene colorimetry.

| Engineering Control

Use only with sufficient ventilation, and local forced exhaust ventilation is preferred. Use explosion-proof electrical appliances, ventilation, lighting, and other equipment. Equipment grounding. If appropriate, install automatic alarm devices and accident ventilation facilities. Set up emergency evacuation passageways and necessary evacuation areas.

| Respiratory system protection

Generally, no special protection is required, and it is recommended to wear a self priming filter type gas mask (semi mask) or air respirator under special circumstances.

| Eye protection

Wear goggles.

| Skin and body protection

Wear anti-static work clothes and anti-smashing safety shoes.

| Hand protection

Wear protective gloves suitable for the job

Section 9 Physical and Chemical Properties

Component:	Acetylene
Appearance/Character:	Colorless gas, industrial products have an unpleasant odor of garlic

pH value:	Not applicable for gases and gas mixtures
Melting point（℃）：	-81.8
Boiling point（℃）：	-83.8
Relative vapor density（air=1）	0.91
Relative density（water=1）	Not applicable
Saturated vapor pressure(kPa):	4053（16.8℃）
Critical temperature（℃）：	35.2
Critical pressure(MPa):	6.15
Octanol/water partition coefficient:	0.37
Flash point（℃）：	Not applicable for gases and gas mixtures
Ignition temperature（℃）：	305
Upper and lower explosion limits [%(V/V)]	Upper limit %(V/V)：100 Lower limit %(V/V)：2.2
Solubility in water(mg/L)	-
Solubility:	Slightly soluble in water and ethanol, soluble in acetone, chloroform, and benzene.
Other information:	Acetylene is usually packaged by dissolving in solvents and porous materials

Section 10 Stability and Reactivity

| 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.

| Incompatible substances

Strong oxidant, halogen.

Forms explosive acetylides with copper,silver and mercury

Do not use alloys containing more than 65% copper

Do not use alloys containing more than 45% silver

For additional information on compatibility refer to ISO 11114.

| Conditions to avoid

Keep away from heat, sparks,open flames and hot surface.-No Smoking.

High temperature

High pressure

Avoid moisture in installation systems

| Hazardous reactions

Intense combustion, explosion, polymerization, decomposition.

| Decomposition product

Hydrogen carbon.

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

Section 11 Toxicological Information

| Acute toxicity

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.

| Carcinogenicity
No data

| Skin irritation or corrosiveness
No data

| Eye irritation or corrosion
No data

| Skin sensitization
No data

| Respiratory sensitization
No data

| Germ cell mutagenicity
No data

| Reproductive toxicity
No data

| Specific target organ systemic toxicity -- possibility of one exposure
No data

| Specific target organ systemic toxicity - repeated exposure
No data

| Inhalation hazard
No data

Section 12 Ecological Information

| Acute aquatic toxicity
EC50 48h - Daphnia magna(mg/l) : 242 mg/l

EC50 72h - Algae(mg/l): 57 mg/l

LC50 96h - Fish(mg/l): 545 mg/l

| Chronic aquatic toxicity
No data

| Persistence and degradability
Will rapid degrade by indirect photolysis in air.

Will not undergo hydrolysis.

| Potential bioaccumulation
Not expected to bioaccumulate due to the low log kow(log kow<4)

| Mobility in soil
Because of its high volatility,the product is unlikely to cause ground or water pollution.

Partition into soil is unlikely.

| Other harmful effects
No data

Section 13 Disposal Considerations

| Disposal methods
Waste products: Return to the supplier for disposal, and during emergency disposal, directly and slowly discharge into the outdoor atmosphere.

Abandoned packaging: After emptying the packaging, there may still be residue hazards, which should be kept away from heat and ignition sources and returned to the supplier.

| Disposal considerations
Please refer to the "Waste Disposal" section.

Section 14 Transportation information

| UN number：1001

| UN proper shipping name： Acetylene Dissolved

| UN Hazard Classification： 2.1

| Packaging category： Not applicable

| Packaging label

| Marine pollutants (Yes/No)： No

| Methods of packing

Packed in pressure containers such as steel gas cylinders. Follow the manufacturer's recommended method for packaging.

| Precautions for transport

The exhaust pipe of the vehicle carrying this article must be equipped with a fire arresting device. It is prohibited to use mechanical equipment and tools that are prone to generate sparks for loading and unloading.

When transporting with a steel cylinder, it is necessary to wear a safety helmet on the cylinder to ensure that the container is fully secured.Before transportation, check whether the packaging container is complete and sealed.

Danger signs and notices shall be posted on the means of transportation according to relevant transportation requirements.

Transport vehicles should be equipped with corresponding types and quantities of fire-fighting equipment and leakage emergency treatment equipment.

During highway transportation, it is necessary to follow the prescribed route and not stay in residential and densely populated areas.

Section 15 Regulatory Information

|The following laws, regulations, rules, and standards provide for the management of this chemical：

Catalogue of Hazardous Chemicals (2015 Edition), Announcement No. 5 of the State Administration of Work Safety in 2015

Regulations on the Safety Management of Hazardous Chemicals (Decree No. 344 of the State Council, implemented on March 15, 2002, and Decree No. 591 of the State Council effective on December 1, 2011)

General Principles for Classification and Hazard Disclosure of Chemicals (GB 13690-2009)

Series of standards for classification, precautionary labelling, and precautionary statements of chemicals (GB20576-2006~GB20602-2006)

List of Dangerous Goods (GB12268-2005):

List of Existing Chemicals in China (IECSC):

Content and Project Sequence of Chemical Safety Data Sheet (GB/T16483-2008)

General Rules for the Storage of Commonly Used Hazardous Chemicals (GB15603)

Occupational exposure limits for hazardous factors in the workplace - Part 1: Chemical hazardous factors (GBZ 2.1-2007)

Comprehensive Emission Standard of Air Pollutants of the People's Republic of China (GB 16297)

Users should pay attention to other local regulatory requirements

Section 16 Other Information

| Modification Description

This SDS is revised in accordance with standards such as "Content and Project Sequence of Chemical Safety Data Sheets" (GB/T16483-2008) and "Guidelines for the Preparation of Chemical Safety Data Sheets" (GB/T 17519-2013). The GHS classification results of chemicals are based on the "Guidelines for the Implementation of the Catalogue of Hazardous Chemicals (2015 Edition)" (for Trial Implementation) and the "Code for the Classification and Labelling of Chemicals" (GB 30000.2-2013~GB 30000.29-2013) series of standards.

| References

【1】 International Chemical Safety Programme: International Chemical Safety Cards (ICSCs), website：http://www.ilo.org/dyn/icsc/showcard.home。

【2】 International Agency for Cancer Research, website：http://www.iarc.fr/

【3】 OECD Global Chemicals Information Platform, website：

http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

Abbreviations

CAS–Chemical Abstract Number
UN–United Nations
PC-STEL–Short Time Exposure Allowable Concentration
PC-TWA–Time Weighted Average
DNEL–Derived No Impact Level
IARC–International Agency for Cancer Research
RPE–Respiratory Protective Equipment
PNEC–Predicted Ineffective Concentration
LC_{50}– 50% lethal concentration
LD_{50}–50%lethal dose
NOEC–No Observed Effect Concentration
EC_{50}–50%Effective Concentration
PBT–Persistence, Bioaccumulation, Toxicity
POW–Octanol/Water Partition Coefficient
BCF–Biological Concentration Factor (BCF)
vPvB–Persistence, Bioaccumulation
CMR–Carcinogenic, teratogenic, and reproductive toxic chemicals
IMDG–International Maritime Organization
ICAO/IATA–International Civil Aviation Organization/International Air Transport Association

Disclaimers

The format of this safety technical specification conforms to the requirements of GB/T16483 and GB/T17519 in China. The data is sourced from international authoritative databases and data submitted by enterprises. Other information is based on the company's current knowledge. We strive to ensure the accuracy of all information contained herein, but due to the diversity of information sources and the limitations of our knowledge, this document is for user reference only. Users of safety technical instructions should make judgments on the reasonableness of relevant information based on the purpose of use. We do not assume any responsibility for any damage caused by the operation, storage, use, or disposal of this product.