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|  | <b>MATERIAL SAFETY DATA SHEET</b> | Page Number<br>1/5 |
|   |                                   | Date: 28/10/2018   |
| <b>MSDS V1.1</b>  | <b>Acetylene</b>                  | <b>DG008G</b>      |



Label 2.1: flammable gas.



F+ : Extremely flammable



NFPA RATINGS

### 1 IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

|                               |  |
|-------------------------------|--|
| <b>Trade Name</b>             | : Acetylene                                |
| <b>Chemical Formula</b>       | : C <sub>2</sub> H <sub>2</sub>            |
| <b>Chemical Family</b>        | : Alkyne                                   |
| <b>MSDS No</b>                | : DG008G                                   |
| <b>Company Identification</b> | : Aldakheel Industrial Gases Plant (DIGAS) |
| <b>Emergency Phone Number</b> | : 04-8455-101                              |

### 2 COMPOSITION / INFORMATION ON INGREDIENTS

| COMPONENT | CAS NUMBER | CONCENTRATION |
|-----------|------------|---------------|
| Acetylene | 74-86-2    | >99%*         |

\*The symbol > means "greater than"

### 3 HAZARDS IDENTIFICATION

|  |   |
|--|---|
| <b>Emergency Overview</b>                            | : <b>Danger!</b> Flammable gas under pressure. Can form explosive mixtures with air. Fusible plugs in top, bottom, or valve melt at 98-107°C (208-224°F). Do not discharge at pressures above 15 psig (103 kPa). pressures above 15 psig (103 kPa). Self-contained breathing apparatus may be required by rescue workers.   |
| <b>Inhalation:</b>                                   | : Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, nausea, vomiting, and unconsciousness. The vapor from a liquid release may also cause in-coordination, abdominal pain. Effects may be delayed. Lack of oxygen can kill.  |
| <b>Skin Contact</b>                                  | : No harm expected from vapor. Liquid (acetone) may cause frostbite..   |
| <b>Swallowing</b>                                    | : An unlikely route of exposure, but frostbite of the lips and mouth may result from contact with the liquid. If swallowed, the liquid may cause nausea.  |
| <b>Eye Contact</b>                                   | : Vapour containing acetone may cause irritation. Liquid (acetone) may cause irritation and frostbite.  |
| <b>Effects of Repeated (Chronic) Overexposure</b>    | : NOTE: Acetylene cylinders are filled with a porous material containing acetone into which the acetylene is dissolved. ACGIH has established a TLV-TWA of 500 ppm for acetone and a STEL of 750 ppm.<br>WORKING WITH WELDING AND CUTTING MAY CREATE ADDITIONAL HEALTH HAZARDS. FUMES AND GASES can be dangerous to your health and may cause serious lung disease.* Keep your head out of the fumes. Do not breathe fumes and gases caused by the process. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. The type and amount of fumes and gases depend on the equipment and supplies used. Possibly dangerous materials may be found in fluxes, coatings, gases, metals etc. Obtain a Material Safety Data Sheet (MSDS) for each material used. Air samples can be used to find out what respiratory protection is needed. Short term overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. |
| <b>Other Effects of Overexposure</b>                 | : None known.   |
| <b>Medical Conditions Aggravated by Overexposure</b> | : Repeated or prolonged exposure is not known to aggravate medical condition.   |
| <b>Potential Environmental Effects</b>               | : None expected.  |

Aldakheel Industrial Gases Plants (DIGAS)

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**4 FIRST AID MEASURES**

|                           |   |
|---------------------------|---|
| <b>Inhalation</b>         | : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Get medical attention immediately.  |
| <b>Skin Contact</b>       | : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.  |
| <b>Swallowing</b>         | : If liquid is swallowed, immediately give two glasses of water and induce vomiting if victim is conscious. Call a physician.   |
| <b>Eye Contact</b>        | : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. See a physician, preferably an ophthalmologist, immediately.  |
| <b>Notes to Physician</b> | : Aspirated acetone may cause severe lung damage. If a large quantity of material has been swallowed, stomach contents should be evacuated quickly in a manner that avoids aspiration. Otherwise, there is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. |

**5 FIRE-FIGHTING MEASURES**

|   |   |
|---|---|
| <b>Flammable class</b>  | : Extremely flammable.  |
| <b>Extinguishing media</b><br><b>Suitable extinguishing media</b> | : All known extinguishants can be used.   |
| <b>Hazardous combustion products</b>                              | : Incomplete combustion may form carbon monoxide.   |
| <b>Protection of firefighters</b>                                 | : DANGER! Flammable gas under pressure. Evacuate all personnel from danger area. Immediately cool cylinders with water spray from maximum distance, taking care not to extinguish flames. If flames are accidentally extinguished, explosive re-ignition may occur. Use self-contained breathing apparatus. Remove ignition sources if without risk. Stop flow of gas if without risk while continuing cooling water spray. Remove all cylinders from area of fire if without risk. Allow fire to burn out.   |
| <b>Specific physical and chemical hazards</b>                     | : Heat of fire can build pressure in cylinder and cause it to rupture. Acetylene cylinders are provided with pressure relief devices designed to vent contents when exposed to elevated temperature. No part of a cylinder should be subjected to a temperature higher than 52°C (125°F). If venting or leaking acetylene catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive re-ignition 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 area, especially confined areas, check atmosphere with an approved explosion meter. |
| <b>Protective equipment and precautions for firefighters</b>      | : Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.  |

**6 ACCIDENTAL RELEASE MEASURES**

|                                  |   |
|----------------------------------|---|
| <b>Personal precautions</b>      | : Evacuate area. Wear self-contained breathing apparatus when entering unless atmosphere is proved to be safe. Ensure adequate air ventilation. |
| <b>Environmental precautions</b> | : Try to stop release. Eliminate ignition sources.  |
| <b>Clean up methods</b>          | : Ventilate area.   |

**7 HANDLING AND STORAGE**

|  |  |
|--|--|
| <b>Precautions to be taken in handling</b> | : Keep away from heat, sparks, and open flame. Use only spark-proof tools and explosion-proof equipment. Never use acetylene at pressures exceeding 15 psig (103.5 kPa). Can cause rapid suffocation due to oxygen deficiency. Close valve after each use; keep closed even when empty. Arcs and sparks can ignite combustible materials. Prevent fires. |
|--|--|

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**7 HANDLING AND STORAGE (Continued)**

**Precautions to be taken in storage & use** : Acetylene storage in excess of 2,500 cu ft (70.79 m<sup>3</sup>) is prohibited in buildings with other occupancies. Store and use with adequate ventilation. Separate acetylene cylinders from oxygen and other oxidizers by at least 20 ft (6.1 m), or use a barricade of noncombustible material. This barricade should be at least 5ft (1.53 m) high and have a fire resistance rating of at least ½ hour. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52°C(125°F).

**8 EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering controls** : Use a local exhaust system, if necessary, to prevent oxygen deficiency and to keep hazardous fumes and gases in the worker's breathing zone below all applicable exposure limits.

**Local exhaust** : Use a local exhaust system, if necessary, to prevent oxygen deficiency and to keep hazardous fumes and gases in the worker's breathing zone below all applicable exposure limits.

**Mechanical (General)** : General exhaust ventilation may be acceptable if it can maintain an adequate supply of air and keep hazardous fumes and gases in the worker's breathing zone below all applicable exposure limits.

**Special** : None.

**Other** : None.

**Personal protective equipment**

**Skin Protection** : Wear work gloves when handling cylinders; welding gloves for welding and cutting.

**Eye/Face Protection** : Wear goggles with filter lenses. Provide protective screens and goggles, if necessary, to protect others.

**Respiratory Protection** : Use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate. Adequate ventilation must keep worker exposure below all applicable limits for fumes, gases, and other by-products of welding with acetylene.

**Other Protective Equipment** : As needed, wear hand, head, and body protection, which help to prevent injury from radiation and sparks. 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. Regardless of protective equipment, never touch live electrical parts.

**9 PHYSICAL AND CHEMICAL PROPERTIES**

|  |   |
|--|---|
| <b>Appearance</b>                              | : Colorless gas.  |
| <b>Odor</b>                                    | : Acetylene of 100% purity is odorless, but commercial acetylene has a distinctive, garlic-like odor. |
| <b>Odor Threshold</b>                          | : Not available.  |
| <b>Physical State</b>                          | : Gas at normal temperature and pressure  |
| <b>pH</b>                                      | : Not applicable.   |
| <b>Melting Point</b> at 10 psig (170 kPa abs)  | : -82.2°C (116°F)   |
| <b>Boiling Point</b> at 10 psig (170 kPa abs)  | : -75.2°C (-103.4°F)  |
| <b>Evaporation Rate</b> (Butyl Acetate = 1)    | : Not applicable.   |
| <b>Flammability</b>                            | : Flammable.  |
| <b>Flammable Limits In Air</b> , % by volume:  | : <b>Lower</b> 2.5% <b>Upper</b> 100%   |
| <b>Vapor Pressure</b> at 21.1°C (70°F)         | : 649.6 psia (4479 kPa abs)*  |
| <b>Vapor Density</b> at 0°C (32°F)             | : 0.00117 g/ml  |
| <b>Specific Gravity</b> (H <sub>2</sub> O = 1) | : Not applicable.   |
| <b>Molecular Weight</b>                        | : 26.04 g/mole  |
| <b>Molecular Formula</b>                       | : C <sub>2</sub> H <sub>2</sub>   |

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**10 RAW MATERIALS INFORMATION**

| COMMODITY        | SYNONYM         | FORMULA          |        |
|------------------|-----------------|------------------|--------|
| Calcium Carbide  | CALCIUM CARBIDE | CaC <sub>2</sub> |        |
| ITEM             | MEASURE         | STANDARD         | RESULT |
| H <sub>2</sub> S | % (v/v)         | 0.12≤            | 0.08   |
| PH <sub>3</sub>  | % (v/v)         | 0.08≤            | 0.06   |
| Gas Yield        | L/KG            | 285-295          | 295    |
| Size             | MM              | 25-50            | 25-50  |

**11 STABILITY AND REACTIVITY**

**Chemical Stability** :  Unstable.  Stable.  
 Acetylene is stable as shipped. Avoid use at pressures above 15 psig (103kPa).

**Conditions to Avoid** : Elevated temperature and pressure and/or the presence of a catalyst.

**Incompatible Materials** : Copper, silver, mercury, or their alloys; oxidizing agents; acids; halogens; moisture.

**Hazardous Decomposition Products** : Thermal decomposition or burning may produce CO/CO<sub>2</sub>H<sub>2</sub>. The welding and cutting process may form reaction products such as CO and CO<sub>2</sub>. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.

**Possible Of Hazardous Reactions** :  May Occur.  Will Not Occur.  
 Fire or explosion may result from use at elevated temperatures and pressures or from use with incompatible materials.

**12 TOXICOLOGICAL INFORMATION**

**Acute Dose Effect** : No known effects from acetylene gas. The welding process may generate hazardous fumes and gases.

**13 ECOLOGICAL INFORMATION**

**Ecotoxicity** : No adverse ecological effects expected.

**Other Adverse Effects** : None known. Acetylene does not contain any Class I or Class II ozone-depleting chemicals.

**14 DISPOSAL CONSIDERATION**

**Waste Disposal Method** : Do not attempt to dispose of residual or unused quantities. Return cylinder to DIGAS.

**15 TRANSPORT INFORMATION**

**Transport Information** : Avoid transport on vehicles where the load space is not separated from the driver's  
 : Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in  
 : Before transporting product containers:  
 - 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.  
 - Ensure there is adequate ventilation.  
 - Compliance with applicable regulations.

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**16 OTHER INFORMATION**

Ensure all national/local regulations are observed.

Ensure operators understand the flammability hazard.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

**FUMES AND GASES** 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.

**HAZARD RATING SYSTEMS:**

**NFPA Ratings:**

Health =1  
 Flammability =4  
 Instability =3  
 Special = None

**HMIS Ratings:**

Health =2  
 Flammability =4  
 Physical Hazard =2

**STANDARD VALVE CONNECTIONS:**

**THREADED** : The CGA-300 connection is standard for cylinders.

**PIN-INDEX YOKE** : Not applicable

Use the proper CGA connections. **DO NOT USE ADAPTERS.**

This Material Safety Data Sheet has been established for the best knowledge of DIGAS.

Details given in this document are believed to be correct at the best of DIGAS knowledge. 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.

**End of Documents**