



LIQUID CONTAINER PRODUCT LABELS- REFRIGERATED LIQUIDS

TD 28/18/ E

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1. INTRODUCTION

Across the Middle East there is a lack of national regulations or clear standards for product identification and the consequent hazards that these might pose. The Cryogenic liquid are primarily identified by the product labels affixed on the container.

MEGA realizes the consequences of potential of harm to human life and property damage that can occur due to misidentifying the product, not comprehending the product hazards, using the product wrongly etc. This document covers the most basic requirement of identification of the product and the hazards of liquefied compressed gases, by means of product labeling.

In preparing this document the current industry practices of IGCs (Industrial Gas Companies) in the Middle East have been reviewed. The MEGA recommendation is for the adoption of the latest UN recommendations formulated in the GHS (Globally Harmonized System). The adoption of these standards will mitigate the risks associated with misidentification of the product, filling incorrect product, wrong product delivery to consumer, provide the first and key information on the product hazards.

2. BACKGROUND

Under the umbrella of the UN (United Nations) CLP Regulation has been initiated. The CLP regulations were initiated in 1992 in Rio de Janeiro at the first UN Conference of the Environment and Development. One of the resolutions of the conference was to create by the year 2000 a Globally Harmonized System (GHS) for the classification and labelling of chemicals, for all sectors and worldwide. This project resulted in the Globally Harmonized System (GHS) adopted in December 2002 by the UN Committee of Experts for the Transport of Dangerous Goods and for the GHS (UNCE-TDG/GHS).

The aim of this document is to propose that industrial gas companies across the Middle East to be in compliance with the new GHS (globally harmonized system) requirements and the transport regulation standard of product labeling for owned liquid containers to have a fully coordinated system.

3. SCOPE

This document details the requirement for the content on the product labels. This structure of the product label is applicable for liquid filled in containers in general. Additionally, the product labels to be used for the commonly used cryogenic liquid are also provided here. These are:

- Liquid Oxygen
- Liquid Argon
- Liquid Nitrogen
- Liquid Carbon Dioxide
- Liquid Helium

Client owned containers for the above cryogenic liquid are also in the scope of this product labelling standard.

4. MEGA RECOMMENDATIONS

MEGA's approach has been to adopt the requirements and the output of the CLP regulations or the GHS. In the selection of the content MEGA has referred to the EIGA document (SAC Doc 169/14/E, Classification and Labelling Guide).

This effort is expected to provide harmonized labels and label content for the IGCs (Industrial Gas companies) operating under the umbrella of MEGA. MEGA recommends implementing the Product Labelling of Cylinders as per standard, as soon as practically possible, once stocks of existing labels are used up.

5. TERMS AND DEFINITIONS

For the purpose of this document, the following terms and definition apply.

5.1. Refrigerated Liquids: Substances which cannot be liquefied by pressure application alone, substances that are artificially cooled to become a liquid. For purposes of this publication, the commonly handled refrigerated liquids by MEGA members include the following gases: Argon, Carbon Dioxide, Helium, Nitrogen, Oxygen.

5.2. Gas means a substance which (i) at 50 °C has a vapour pressure greater than 300 kPa (absolute); or (ii) is completely gaseous at 20°C at a standard pressure of 101.3 kPa.

This definition means that pure substances are considered as gases when their boiling point (BP) is not higher than 20°C. Substances with a boiling point higher than 20°C are "liquids" except those few that develop a vapour pressure higher than 300 kPa at 50°C; these liquids are considered as "gases" because of the hazard of pressure when packaged.

5.3. Gas for Medical Use:

Any gas or mixture of gases intended to be administered to patients for therapeutic, diagnostic or prophylactic purposes, with or without pharmacological action, or to be used for surgical tools, and it covers both medicinal and medical gases.

5.4. Inert Gas:

Non-toxic, non-corrosive, non-flammable and non-oxidizing gas or gas mixture.

5.5. Industrial Gas:

Gas not covered by 5.3 and not used for breathing gas use.

5.6. GHS

Globally Harmonized System.

5.7. GCC

Gulf Cooperation Council. GCC countries include, Bahrain, Kuwait, Qatar, Oman, Kingdom of Saudi Arabia and United Arab Emirates.

5.8. SDS

Safety Data Sheet

5.9. UN

United Nations

5.10. CLP

Classification, Labelling and Packaging

6. CONTAINER LABELLING GUIDELINES

This section covers the requirements for container labels. The requirements for the information and the content are explained below. Also a practical example of a product label of liquid Oxygen is used. Each of the requirements of the product label content and information is cross referenced to the label by means of a numeric number for ease of reference and use. The numeric numbers mentioned in each section are also shown on the cylinder label highlighted in yellow.

As a reference the CLP Regulation states that “manufacturers, importers and downstream users shall classify substances or mixtures before placing them on the market. Where a substance or mixture is classified as hazardous, suppliers shall ensure that the substances or mixture is labelled and packaged in accordance with Titles III and IV of the CLP Regulation before placing it on the market.”

6.1 Product Label Content

The below are the labeling requirements to be reflected on the labels:

- Name, Address and Telephone number of the Supplier
- Product Identification
- Hazard Pictogram(s)
- Signal Word(s)
- Hazard Statement(s)
- Precautionary Statement(s)
- Any other supplemental information

6.1.1 Name, Address and Telephone number of Supplier

The companies log will appear on the top left hand side of the label. Additionally, the information on the address and contact information (telephone number etc.) will be reflected on the right bottom of the cylinder label.

6.1.2 Product Identification

The product identification is done by means of the UN No. and the UN description of the product. It is the name appearing in the CLP regulation. This can be referred to from the tables in section 4 of the EIGA document (SAC Doc 169/14/E). The name shall appear on the top right hand side of the label.

Additional to the official UN number and description, the companies have the choice of putting in place the name of the gas (this may include the proprietary / brand names) and the location for this shall be below the company's logo (which is placed on the top left hand side of the label).

6.1.3 Hazard Pictograms

The hazard pictograms to be used for the gases are derived from the tables of section 4 of the EIGA document (SAC Doc 169/14/E).

- The pictograms are shown here, for the liquid oxygen
- It is important to note:
 - The GHS pictograms have to be shown fully and without overlap.
 - Only the transport pictograms are allowed to be overlapped.

6.1.4 Signal Words

The signal words will be either "Danger" or "Warning". Both of these signal words cannot be used on the same label.

6.1.5 Hazard Statements

The label shall cover all the relevant hazard statements determined by the classification for the different hazard classes, except when there is duplication. Annexure 6.1 of the EIGA document (SAC Doc 169/14/E) reflects the hazard statements per the regulations. Table 4.6 Labelling Data of the same document summarizes the choice of the hazard statements accepted for each of the gases.

6.1.6 Precautionary Statements

Precautionary or P-statements are not the part of the legal requirement that used to exist for the safety or S-phrases in the previous system for the labeling. These are cross referenced and are reflected in the same tables as mentioned in the section of the hazard statements.

6.1.7 Supplemental Information

Additional phrases that are used as a standard in the gas industry such as: close valve after each use, return with residual pressure etc. are part of the supplemental phrases.

The above three sections, i.e. 6.1.5 hazard statements, 6.1.6 precautionary statements and 6.1.7 supplemental phrases are to be readable; letter size could be 6 mm (or 24 pt) or more.

6.1.8 Other Information

This information may be for any other additional statement or even information on the filling pressure, volume content etc.

6.2 Dimensioning and Size

In addition to the instructions above detailing the content and sizes it is important to note that the font sizes should be large enough to allow easy readability of the user. The CLP regulations only recommends the minimum size for the labels and this is 74mm x 105 mm.

6.2.1. Dimensions

In the case of MEGA, with respect to the nature of (and complexity) where many different languages are being spoken and used, it is required to have the labels bilingual, i.e. in Arabic and English. This in turn reflects on the size of the label itself.

MEGA recommends minimum sizes for product labels 160 mm x 140 mm for all gases (Oxidising, Inert, and Flammable)

However, due to the bilingual nature of the labels proposed the sizes can be larger. The rule for compliance will be to make sure that the key liquid container markings do not get covered, when pasting the labels.

The minimum size for the pictogram label is 25mm x 25mm: for liquid containers with diameter ≥ 180 mm). There is no requirement for the centering of the pictograms on the labels and these can be off centered and located suitably.

6.1 Example



4.0" x 4.5"

Company name

UN 1073 OXYGEN REFRIGERATED LIQUID

OXYGEN REFRIGERATED LIQUID

May cause or intensify fire, oxidizer.

Contains Refrigerated gas, may cause cryogenic burn or injury.

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials

Keep valves and fitting free from oil and grease

Such back of water into the container to be prevented

CAS No. 7782-44-7

Company Address

6.1 Table with Product Label Content Information

Cylinder Label Content based on the United Nation's GHS(Globally Harmonized System)

(It is important to note that the transport pictograms take precedence on the pictograms in the table below)

UN No	UN Description	UN Class	Hazard - Phrase	Prevention - Phrase	Further Phrases on cylinder product label
1951	Argon, Refrigerated liquid	2.2	Contain refrigerated gas, may cause cryogenic burn or injury Asphyxiant in high concentration Store and use with adequate ventilation. May explode if heated	Wear cold insulating gloves/ face shield/ eye protection	Return with residual pressure! Use in accordance with company specific safety data sheets. Close valve after use
2187	Carbon dioxide Refrigerated liquid	2.2	Contain refrigerated gas, may cause cryogenic burn or injury Asphyxiant in high concentration Store and use with adequate ventilation, may explode if heated	Wear cold insulating gloves/ face shield/ eye protection	Return with residual pressure! Use in accordance with company specific safety data sheets. Close valve after use
1963	Helium, Refrigerated Liquid	2.2	Contain refrigerated gas, may cause cryogenic burn or injury Asphyxiant in high concentration Store and use with adequate ventilation. May explode if heated	Wear cold insulating gloves/ face shield/ eye protection	Return with residual pressure! Use in accordance with company specific safety data sheets. Close valve after use
1977	Nitrogen Refrigerated liquid	2.2	Contain refrigerated gas, may cause cryogenic burn or injury Asphyxiant in high concentration Store and use with adequate ventilation. May explode if heated.	Wear cold insulating gloves/ face shield/ eye protection	Return with residual pressure! Use in accordance with company specific safety data sheets. Close valve after use
1073	Oxygen Refrigerated liquid	2.2 + 5.1	May cause or intensify fire, oxidizer Contain refrigerated gas, may cause cryogenic burn or injury	Store away from combustible materials: Keep valves and fitting free from oil and grease. Wear cold insulating gloves/ face shield/ eye protection	Return with residual pressure! Use in accordance with company specific safety data sheets. Close valve after use



7. PRODUCT LABEL AND CONTENT TEXT



4.0" x 4.5"

UN 1073 OXYGEN REFRIGERATED LIQUID

OXYGEN REFRIGERATED LIQUID

May cause or intensify fire, oxidizer

Contains Refrigerated gas, may cause cryogenic burn or injury.

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials

Keep valves and fitting free from oil and grease

Suck back of water into the container to be prevented

CAS No. 7782 – 44-7



UN 1977 NITROGEN REFRIGERATED LIQUID

NITROGEN REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury.

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials

Keep valves and fitting free from oil and grease

Suck back of water into the container to be prevented

CAS No. 7727 – 37-9



UN 2187 CARBON DIOXIDE REFRIGERATED LIQUID

CARBON DIOXIDE REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury.

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials

Keep valves and fitting free from oil and grease

Suck back of water into the container to be prevented

CAS No. 124-38-9



Contains Refrigerated gas, may cause cryogenic burn or injury.

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials

Keep valves and fitting free from oil and grease

Suck back of water into the container to be prevented

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UN 1963 HELIUM REFRIGERATED LIQUID

HELIUM REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury.
 Asphyxiant in high concentration
 Wear cold insulating gloves/ face shield/ eye protection
 Suck back of water into the container to be prevented
 Use in accordance with (gas company name) safety data sheet.
 Close valve after use.

CAS No. 7440-59-7

7.1. Hazard, Precautionary & Supplemental Statements

UN 1951 ARGON REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Suck back of water into the container to be prevented

Use in accordance with (gas company name) safety data sheet

Close valve after use.

UN 2187 CARBON DIOXIDE REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Suck back of water into the container to be prevented

Use in accordance with (gas company name) safety data sheet

Close valve after use.

UN 1963 HELIUM REFRIGERATED LIQUID

Contains Refrigerated gas, may cause cryogenic burn or injury

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Suck back of water into the container to be prevented

Use in accordance with (gas company name) safety data sheet

Close valve after use.

UN 1977 NITROGEN REFRIGERATED LIQUID

Contains Refrigerated gas may cause cryogenic burn or injury

Asphyxiant in high concentration

Wear cold insulating gloves/ face shield/ eye protection

Suck back of water into the container to be prevented

Use in accordance with (gas company name) safety data sheet

Close valve after use.

UN 1073 OXYGEN REFRIGERATED LIQUID

May cause or intensify fire, oxidizer

Contains Refrigerated gas, may cause cryogenic burn or injury

Wear cold insulating gloves/ face shield/ eye protection

Store away from combustible materials: Keep valves and fitting free from oil and grease

Suck back of water into the container to be prevented

Use in accordance with (gas company name) safety data sheet

Use only properly specified equipment which is suitable for this product

Close valve after use

8. REFERENCES

- EIGA Document – SAC Doc 169/14/E, Classification and Labelling Guide
www.eiga.eu