

CGA P-62 — 2018

2ND EDITION

REAFFIRMED 2024

GUIDELINE FOR SEA TRANSPORT OF MULTIPLE ELEMENT GAS CONTAINERS AND PORTABLE TANKS FOR GASES



PREFACE

As part of a program of harmonization of industry standards, the Compressed Gas Association (CGA) has issued CGA P-62, *Guideline for Sea Transport of Multiple Element Gas Containers and Portable Tanks for Gases* jointly produced by members of the International Harmonization Council and originally published by the European Industrial Gases Association (EIGA) as EIGA Doc 41, *Guideline for Sea Transport of Multiple Element Gas Containers and Portable Tanks for Gases*.

This publication is intended as an international harmonized standard for the worldwide use and application of all members of the Asia Industrial Gases Association (AIGA), Compressed Gas Association (CGA), European Industrial Gases Association (EIGA), and Japan Industrial and Medical Gases Association (JIMGA). Each association's technical content is identical, except for regional regulatory requirements and minor changes in formatting and spelling.

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NOTE—No technical information has been changed from the 2018 edition. This reaffirmed edition may include minor editorial changes.

NOTE—Technical changes from the previous edition are underlined.

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1 Introduction

This publication provides guidance for the safe sea transport of portable tanks and multiple element gas containers (MEGCs) containing gases of Class 2 that are compressed, liquefied, or refrigerated, see Appendix A.

The publication addresses product characteristics, general safety aspects, preparation for shipment, stowage on board ship, transport of containers, and emergency response.

Normally during sea transport, a skilled operator does not accompany these containers so this publication has been written for the guidance of parties involved in their preparation and subsequent sea transportation. Compliance with this publication helps ensure their safe transport.

2 Scope and purpose

2.1 Scope

This publication applies to the sea transport of portable tanks and MEGCs that are used in the industrial, medical, and specialty gases industry for the worldwide transport of Class 2 gases.

2.2 Purpose

To provide guidelines for the safe sea transport of insulated and non-insulated portable tanks and MEGCs, to reduce the potential for unintentional releases of the contents for the duration of a defined journey, and to recommend actions in case of an accidental release.

3 Definitions

For the purpose of this publication, the following definitions apply.

3.1 Publication terminology

3.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2 Should

Indicates that a procedure is recommended.

3.1.3 May

Indicates that the procedure is optional.

3.1.4 Will

Is used only to indicate the future, not a degree of requirement.

3.1.5 Can

Indicates a possibility or ability.

3.2 Technical definitions

3.2.1 Bundles of cylinders

Assembly of cylinders that are fastened together, are interconnected by a manifold, and transported as a unit. The total water capacity shall not exceed 3000 L, except that bundles intended for the transport of Class 2.3 gases shall be limited to 1000 L water capacity.

3.2.2 Compressed gas

Gas when packaged under pressure for transport is entirely gaseous at -58°F (-50°C), this category includes all gases with a critical temperature less than or equal to -58°F (-50°C).

3.2.3 Container

Portable tank or MEGC designed for multimodal use and fitted with devices permitting its ready stowage and handling particularly when being transloaded from one mode of transport to another.

3.2.4 Cylinders

Transportable pressure receptacles with a water capacity not exceeding 150 L.

3.2.5 Holding time

Time that will elapse from the establishment of the initial filling condition until the pressure has risen due to heat influx to the lowest set pressure of the pressure limiting device(s).

3.2.6 Liquefied gas

Gas when packaged under pressure for transport is partially liquid at temperatures greater than -58°F (-50°C). A distinction is made between:

- high pressure liquefied gas, which is a gas with a critical temperature between -58°F and 149°F (-50°C and 65°C); and
- low pressure liquefied gas, which is a gas with a critical temperature greater than 65°C (149°F).

3.2.7 Multiple element gas containers (MEGCs)

Multimodal assemblies of cylinders, tubes, and bundles of cylinders, which are interconnected by a manifold and assembled within a framework. The MEGC includes service equipment and structural equipment necessary for the transport of gases. MEGCs may be equipped with pressure relief devices (PRD)s.

3.2.8 Portable tank

Multimodal tank having a capacity greater than 450 L fitted with service equipment and structural equipment necessary for the transport of refrigerated and nonrefrigerated liquefied gases. The portable tank shall be capable of being filled and discharged without the removal of its structural equipment. It shall possess stabilizing members external to the shell and shall be capable of being lifted when full. Road tank vehicles, rail tank-wagons, non-metallic tanks, and intermediate bulk containers (IBCs) do not meet the definition of a portable tank.

3.2.9 Portable tank for refrigerated liquefied gases

Thermally insulated multimodal tank having a capacity greater than 450 L fitted with service equipment and structural equipment necessary for the transport of refrigerated liquefied gases.

This means a construction that normally consists of either:

- a jacket and one or more inner shells where the space between the shell(s) and the jacket is exhausted of air (vacuum insulation) and may incorporate a thermal insulation system and/or a nitrogen shield; or
- a jacket and an inner shell with an intermediate layer of solid thermally insulating material (for example, solid foam).

NOTE 1—The insulation in all systems is designed to reduce heat inleak so that the pressure will not normally rise to the set pressure of the inner vessel PRD during the duration of transport.

NOTE 2—All types of tanks are fitted with pressure gauges, liquid level gauges, and suitably sized PRDs. The gauges are usually located in a control cabinet together with valves, pipework, and couplings used for filling and the emptying operations. In most cases, the main tank PRDs or their outlets are positioned at the top of the portable tank. Control cabinets may be positioned at the end or the side of the portable tank.

3.2.10 Pressure relief device (PRD)

Pressure or temperature activated device used to prevent the pressure in the container from rising greater than a predetermined maximum, thereby preventing rupture of the container.

NOTE—The term PRD is synonymous with "safety relief device" as used in various applicable regulations, codes, standards, or specifications.

3.2.11 Pressure relief valve (PRV)

Type of PRD designed to relieve excess pressure and to reclose and reseal to prevent further flow of fluid from the container after resealing pressure is achieved.

NOTE—It is characterized by a rapid opening pop action or by opening generally proportional to the increase in pressure over the opening pressure.

3.2.12 Refrigerated liquefied gas

Gas which when packaged for transport is made partially liquid because of its low temperature.

3.2.13 Tube

Seamless transportable pressure receptacles of seamless or composite construction having a water capacity exceeding 150 L but not more than 3000 L.

4 Product characteristics

If there is a product release, the following should be considered:

4.1 Volume of liquefied gases

When liquefied gases evaporate, they will produce approximately 700 to 800 times its volume in gas.

4.2 Gas release

A gas release can go unnoticed because some gases that are transported can be odorless, colorless, and/or non-corrosive. They can act as an asphyxiant in confined spaces. Care shall be taken in case of flammable or toxic gases. See Section 9.

In free air gases will disperse readily. When refrigerated liquefied gases are released into the air, their low temperature usually causes water vapor in the air to condense forming a fog.

4.3 Liquid spillage

Severe cold burns to personnel or cracking of certain materials particularly carbon steel, for example, ships deck plates, can be caused by liquid spillage or improperly controlled venting.

5 General safety aspects

5.1 Personal protection

If there is a requirement to operate the container during transit, as a minimum, the following personal protective equipment and clothing shall be worn:

- eye protection;
- thick gloves; and
- natural fiber clothing or flame-resistant clothing. Synthetic materials are not recommended.

5.2 Emergency response information

Relevant written information concerning the product should be made available to the shipping line. As a minimum, this should include a contact address/telephone number for technical assistance and any other information required by the mode of transport. For example, the *International Maritime Dangerous Goods Code* (IMDG Code) contains the Emergency Schedules (EmS) section, which details the emergency response procedures for ships carrying dangerous goods [1].¹

¹ References are shown by bracketed numbers and are listed in order of appearance in the reference section.