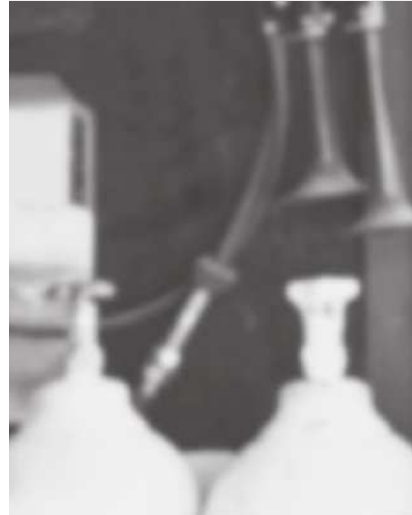




CGA P-100 — 2024

1ST EDITION

STANDARD FOR TEMPORARY LIQUID OXYGEN, NITROGEN, AND ARGON SUPPLY SYSTEMS



Documents

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Work Item 21-119

Bulk Distribution Equipment and Standards Committee

FIRST EDITION: 2024

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1 Introduction

At times it is necessary to install a temporary (also referred to as a portable) supply system at a customer site. A permanent supply system typically is installed on a foundation and is meant to stay in place for a year or more. A temporary supply system stays in place for less than a year and might not have the infrastructure associated with a permanent supply system, such as a foundation.

Some reasons for a temporary supply system are listed below:

- There is an emergency need for product (compressed gas or cryogenic liquid) where no supply system is in place and timing does not allow for installation of a permanent supply system;
- Product demand from an existing permanent supply system has increased beyond the supply system's capacity, requiring an additional temporary supply system to provide supplemental product;
- A permanent supply system is out of service for maintenance or other reasons, requiring a temporary supply system to take its place; and
- The customer is switching suppliers and requires a temporary supply system in the time between removal of the incumbent supply system and installation of the new supply system.

Some types of temporary supply systems are listed below:

- trailer-mounted supply systems;
- skid-mounted supply systems;
- pallet-mounted microbulk tanks with built-in vaporizers; and
- trailer- or skid-mounted individual components (tank or ISO container, vaporizer, piping manifolds, regulator stations, etc.) that are connected at the customer site to create a temporary supply system.

NFPA 55, *Compressed Gas and Cryogenic Fluid Systems*, applies to both temporary (portable) and permanent supply systems [1]. CGA publications such as CGA P-18, *Standard for Bulk Inert Gas Systems (an American National Standard)*, also apply to both temporary and permanent supply systems [2]. However, these standards do not point out the differences between the two types of supply systems, including additional requirements for temporary supply systems. This publication addresses the different requirements and the additional requirements for temporary supply systems

2 Scope

This standard provides the design, installation, start-up, operation, and maintenance requirements for temporary liquid oxygen, nitrogen, and argon supply systems at industrial customer sites. This standard supplements the requirements in the following standards and codes:

- oxygen supply system requirements found in NFPA 55 [1];
- nitrogen supply system requirements found in NFPA 55 and CGA P-18 [1, 2]; and
- argon supply system requirements found in NFPA 55 and CGA P-18 [1, 2].

This standard covers temporary liquid oxygen, nitrogen, and argon supply systems where the product is stored as a cryogenic liquid and supplied to the customer in either liquid or gaseous form.

This standard does not cover the following:

- temporary flammable gas supply systems including hydrogen, which is covered in CGA H-5, *Standard for Bulk Hydrogen Supply Systems (an American National Standard)* [3];
- temporary medical gas supply systems which are covered in CGA M-1, *Standard for Medical Gas Supply Systems at Health Care Facilities (an American National Standard)* and NFPA 55 [4, 1];

- tube trailer used as supply systems which are covered in CGA P-74, *Standard for Tube Trailer Supply Systems at Customer Sites* [5]; and
- temporary supply systems using containers smaller in size than 450 L (120 gal) (such as liquid dewars and DOT liquid 4L cylinders).

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 Bollard

Short, thick post used for protecting equipment or personnel by providing crash protection.

3.2.2 Trycock valve

Physically fixed device set at the proper fill level to prevent overfill.

4 Hazard review

Each site shall have a hazard review per the standards of the temporary liquid oxygen, nitrogen, and argon supply system supplier.

5 Components and hardware

5.1 Supply system support design

5.1.1 Skid-mounted temporary supply system

A skid-mounted temporary supply system design shall comply with ASCE/SEI 7, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* [6]. The standard prescribes design loads for all hazards including dead, live, soil, flood, tsunami, snow, rain, atmospheric ice, seismic, wind, and fire, as well as how to evaluate load combinations.

Skid equipment shall be permanently connected to the skid. Strapping (ratcheted tie down) alone is not permitted. Equipment shall be bolted or welded to the frame.

All ancillary equipment shall comply with ASCE/SEI 7 and applicable local wind and seismic codes [6].

The skid and all ancillary equipment shall be checked for shipping damage upon arrival.