CGA

Compressed Gas Association

The Standard For Safety Since 1913

CGA P-2.7—2018

REAFFIRMED 2023

GUIDELINE FOR THE SAFE STORAGE, HANDLING, AND USE OF SMALL PORTABLE LIQUID OXYGEN SYSTEMS IN HEALTH CARE FACILITIES

FIFTH EDITION

PLEASE NOTE:

The information contained in this document was obtained from sources believed to be reliable and is based on technical information and experience currently available from members of the Compressed Gas Association, Inc. and others. However, the Association or its members, jointly or severally, make no guarantee of the results and assume no liability or responsibility in connection with the information or suggestions herein contained. Moreover, it should not be assumed that every acceptable commodity grade, test or safety procedure or method, precaution, equipment or device is contained within, or that abnormal or unusual circumstances may not warrant or suggest further requirements or additional procedure.

This document is subject to periodic review, and users are cautioned to obtain the latest edition. The Association invites comments and suggestions for consideration. In connection with such review, any such comments or suggestions will be fully reviewed by the Association after giving the party, upon request, a reasonable opportunity to be heard. Proposed changes may be submitted via the Internet at our web site, www.cganet.com.

This document should not be confused with federal, state, provincial, or municipal specifications or regulations; insurance requirements; or national safety codes. While the Association recommends reference to or use of this document by government agencies and others, this document is purely voluntary and not binding unless adopted by reference in regulations.

A listing of all publications, audiovisual programs, safety and technical bulletins, and safety posters is available via the Internet at our website at www.cganet.com. For more information contact CGA. Phone: 703-788-2700, ext. 799. E-mail: customerservice@cganet.com.

Work Item 23-55
Medical Equipment Committee

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

NOTE—Appendix A (Informative) is for information only.

REAFFIRMED: 2023
FIFTH EDITION: 2018
FOURTH EDITION: 2011
THIRD EDITION: 2008
SECOND EDITION: 2000

Contents **Page**

Appendix

1 Introduction

Liquid oxygen systems, when used as recommended, provide a reliable supply of oxygen for breathing therapy. Liquid oxygen systems are in daily use both in home and health care facility environments. These systems have two basic units: a base reservoir unit that holds the principal supply of oxygen stored in liquid phase and a smaller portable unit that can be filled with liquid oxygen from the base reservoir unit and carried by ambulatory patients. Both units are cryogenic vessels that insulate the liquid oxygen from surrounding heat, which causes the liquid oxygen to vaporize into the gas phase. A flow control, when provided, permits setting the prescribed oxygen flow required by the patient. As oxygen is withdrawn, a vaporizing coil within the unit changes the liquid oxygen to low pressure gas and warms it to a temperature suitable for delivery to the patient.

As with oxygen gas supplied in high pressure cylinders, some precautions are necessary to ensure safe use of liquid oxygen systems. The Compressed Gas Association (CGA) has prepared a list of recommended precautions in Appendix A.

In addition to the general precautions for small portable liquid oxygen systems provided in this publication, manufacturers of these systems provide detailed operating instructions for their systems including specific precautions for user safety. These precautions should be observed.

This publication has been prepared as a guide for health care facility staff and other persons who use and/or transfill liquid oxygen for respiration. Transfer of liquid oxygen from one cryogenic container to another, commonly known as transfilling, shall be carried out carefully and requires appropriate training. The National Fire Protection Association's (NFPA) publication, NFPA 99, *Health Care Facilities Code*, contains restrictions for transfilling in medical facilities [1].[1] The filling and handling of liquid oxygen in the home health care industry is subject to U.S. Food and Drug Administration (FDA) regulations governing current good manufacturing practice (CGMP) for medical gases [2]. In Canada, Canadian Standards Association (CSA) Z305.12, *Safe Storage, Handling, and Use of Portable Oxygen Systems in Residential Buildings and Health Care Facilities,* should be consulted [3].

2 Scope and purpose

2.1 Scope

This publication applies only to liquid oxygen systems in the following categories:

- small base reservoir unit systems providing supplemental oxygen therapy for individual patients;
- systems used by health care facility staff when moving patients within the facility; and
- ambulatory systems for an individual patient within a health care facility.

This publication does not apply to larger portable liquid oxygen systems that can be attached to distribution piping in a remote area of the health care facility. See NFPA 99, *Standard for Health Care Facilities*, and CGA V-23, *Standard for Cylinder Connections on Portable Cryogenic Liquid Cylinders (Formerly SB-26)*, for further information regarding the storage, handling, and use of these types of containers [1, 4].

2.2 Purpose

The purpose of this publication is to describe the recommended precautions and safety procedures to be followed when liquid oxygen systems are used within health care facilities. Mishandling of oxygen presents potential hazards to both trained and untrained persons. It is therefore important that personnel who assume the responsibility for oxygen equipment and its use be familiar with the hazards of oxygen, the operational characteristics of the equipment, and the precautions to be observed while using it.

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