# CGA G-7—2019

# STANDARD FOR COMPRESSED AIR FOR HUMAN RESPIRATION

## EIGHTH EDITION

CGA
Compressed Gas Association
*The Standard For Safety Since 1913*

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Medical Gases Committee

NOTE—Technical changes from the previous edition are underlined.

EIGHTH EDITION: 2019
SEVENTH EDITION: 2014
SIXTH EDITION 2008
FIFTH EDITION: 2003

**Contents** **Page**



**Tables**

# 1 Introduction

This publication is intended to present general information regarding the characteristics and use of compressed air. To accomplish its purpose of supplying the answers to as broad a cross-section of inquiries as possible, it covers material of a general nature only. CGA has additional publications on compressed air, which can be found at www.cganet.com. In Canada, CSA Z180.1, *Compressed Breathing Air and Systems* and CSA Z7396.1, *Medical Gas Pipeline Systems - Part 1: Pipelines for Medical Gases, Medical Vacuum, Medical Support Gases, and Anaesthetic Gas Scavenging Systems*, should be consulted [1, 2]. [1]

# 2 Scope

This publication provides information relative to the preparation, transportation, handling, storage, and use of compressed air. While it deals with compressed air used for human respiration, much of the information is equally applicable to compressed air for other purposes. It should be used in conjunction with CGA G-7.1, *Commodity Specification for Air,* which describes the specification requirements and lists the grades for air and prescribes methods of sampling and analysis [3].

# 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.

# 4 What is air?

Air is not an element; it is a mixture of elements and compounds. At atmospheric temperature and pressure, air exists as a colorless, odorless, and tasteless gas.

The composition of dry air under normal conditions at sea level is shown in Table 1. Trace impurity levels can vary with geographic locations or with proximity to industrial areas or highways carrying dense traffic. This composition remains relatively constant at altitudes up to approximately 70 000 ft (21 300 m). Accurate data on the change in composition, if any, at higher altitudes is not available.

Synthetic air, which is also produced by the compressed gas industry, contains not less than 19.5% and not greater than 23.5% oxygen with nitrogen as the balance gas. In Canada, CSA Z180.1 requires that compressed air contains not less than 20% and not greater than 22% oxygen [1]. A major portion of the trace impurities normally contained in air is thereby eliminated.

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