



**CGA G-7.1-2018**  
**COMMODITY SPECIFICATION**  
**FOR AIR**  
**SEVENTH EDITION**

Currently in preview, click buy full version

**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](http://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](http://www.cganet.com). For more information, contact CGA. Phone: 703-788-2700, ext. 799. E-mail: [customerservice@cganet.com](mailto:customerservice@cganet.com).

Work Item 16-022

Atmospheric Gases and Equipment Committee

NOTE—Technical changes from the previous edition are underlined

SEVENTH EDITION: 2018

SIXTH EDITION: 2011

FIFTH EDITION: 2004

FOURTH EDITION: 1997

© 2018 The Compressed Gas Association, Inc. All rights reserved.

All materials contained in this work are protected by United States and international copyright laws. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording, or any information storage and retrieval system without permission in writing from The Compressed Gas Association, Inc. All requests for permission to reproduce material from this work should be directed to The Compressed Gas Association, Inc., 8484 Westpark Drive, Suite 220, McLean, VA 22102. You may not alter or remove any trademark, copyright or other notice from this work.

<b>Contents</b>	<b>Page</b>
1 Scope .....	1
2 Definitions.....	1
3 Classification .....	1
3.1 Quality verification levels (grades).....	1
3.2 Quality tests.....	1
4 Quality verification systems.....	3
4.1 Production qualification tests.....	3
4.2 Analytical requirements of the production qualification tests.....	3
4.3 Lot acceptance tests.....	3
5 Sampling .....	3
5.1 Container sample size.....	3
5.2 Gaseous samples.....	3
6 Analytical procedures .....	4
6.1 Parameters of analysis.....	4
6.2 Percent oxygen concentration.....	4
6.3 Water content.....	5
6.4 Oil and water (condensed) content.....	5
6.5 Carbon monoxide content.....	6
6.6 Odor.....	6
6.7 Carbon dioxide content.....	6
6.8 Total hydrocarbon content.....	7
6.9 Nitrogen dioxide content.....	7
6.10 Nitric oxide content.....	7
6.11 Nitrous oxide content.....	7
6.12 Sulfur dioxide content.....	8
6.13 Halogenated solvents content.....	8
6.14 Gas chromatograph.....	8
6.15 USP tests.....	8
7 Containers.....	8
7.1 Air containers.....	8
7.2 Container preparation.....	9
7.3 Containers for air intended for human respiration.....	9
7.4 Medical air USP.....	9
7.5 Valves on air containers.....	9
7.6 Pressure relief devices.....	9
8 Moisture conversion data.....	9
9 References.....	12
10 Additional references.....	13
<b>Tables</b>	
Table 1—Directory of limiting characteristics.....	2
Table 2—Typical uses.....	2
Table 3—Moisture conversion data [23].....	10

This page is intentionally blank.

Currently in preview, click buy full version

## 1 Scope

This publication describes the specification requirements for air including atmospheric air and air synthesized by blending oxygen and nitrogen in the proper proportions. Atmospheric air contains a large variety of trace constituents. It is impractical to set individual limits for many of these; however, this specification qualifies certain grades of air by limiting the concentrations of specific trace constituents.

NOTE—This publication does not attempt to recommend or establish end usage designations for specific types or grades of products. It is suggested that users requiring this kind of information contact individual gas suppliers.

## 2 Definitions

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

### 2.1 Publication terminology

#### 2.1.1 **Shall**

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

#### 2.1.2 **Should**

Indicates that a procedure is recommended.

#### 2.1.3 **May**

Indicates that the procedure is optional.

#### 2.1.4 **Will**

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

#### 2.1.5 **Can**

Indicates a possibility or ability.

### 2.2 Technical definition

#### 2.2.1 **Container**

Portable compressed gas cylinders and liquid containers made in accordance with Title 49 of the U.S. Code of Federal Regulations (49 CFR) Parts 100-199, Transport Canada's (TC) *Transportation of Dangerous Goods Regulations*; or the ASME *Boiler and Pressure Vessel Code*, Section VIII, Div 1 [1, 2, 3].<sup>1</sup>

## 3 Classification

### 3.1 Quality verification levels (grades)

Table 1 presents the component maxima in parts per million (ppm [v/v]) unless otherwise stated for the quality verification levels (QVLs) of air. A blank indicates no maximum limiting characteristic. The absence of a value in a listed QVL does not imply that the limiting characteristic is or is not present, but merely indicates that the test is not required for compliance with the specification. Typical uses are listed in Table 2.

### 3.2 Quality tests

The supplier ensures by standard practice the QVL of the air. If otherwise required, alternative control procedures are described in 4.3.1, 4.3.2, and Sections 5 and 6.

Other control procedures not listed in this specification are acceptable if agreed upon between the supplier and the customer.

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