CGA C-17—2014

METHODS TO AVOID AND DETECT INTERNAL GAS CYLINDER CORROSION

SECOND EDITION

CGA
Compressed Gas Association
The Standard For Safety Since 1913

PREFACE

As part of a program of harmonization of industry standards, the Compressed Gas Association (CGA) has issued CGA C-17, *Methods to Avoid and Detect Internal Gas Cylinder Corrosion*, jointly produced by members of the International Harmonization Council and originally published by the European Industrial Gases Association (EIGA) as EIGA Doc 62, *Methods to avoid and detect internal gas cylinder corrosion*.

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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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.

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Work Item 11-015
Cylinder Specifications Committee

NOTE—Technical changes from the previous edition are underlined.

SECOND EDITION: 2014
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1 Introduction

There are a number of reasons for a cylinder to fail while in service from abuse, misuse, manufacturing flaws, and internal corrosion. A number of gases can react with moisture to produce corrosive media that could react with the cylinder material and lead to a cylinder failure. The number of incidents resulting from internal corrosion is relatively small compared to the number of cylinders in service because the industry follows procedures to reduce moisture in cylinders.

2 Scope and purpose

This publication provides guidance to help prevent and detect internal corrosion of compressed gas cylinders. It applies to gas cylinders and bundles of cylinders, including cylinder installations at customer sites.

The main emphasis of this publication focuses on steel cylinders containing oxygen/oxygen mixtures and carbon dioxide/carbon dioxide mixtures in the presence of moisture. Certain aspects of this publication can also apply to other gases such as hydrogen chloride.

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
Indicate 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 Corrosion
Reaction of the cylinder material with certain aqueous media (e.g., carbonic acid formed from carbon dioxide and water).

3.2.2 Corrosive gas
Gas in a cylinder that will interact with the cylinder material in an oxidizing manner in the presence of moisture.

3.2.3 Hydraulic test
Test performed on the cylinder using an aqueous solution such as a test to check for leaks (proof test) or an expansion test (hydrostatic test).