CGA

Compressed Gas Association

The Standard For Safety Since 1913

CGA H-1—2011

REAFFIRMED 2017

SERVICE CONDITIONS FOR PORTABLE, REVERSIBLE METAL HYDRIDE SYSTEMS

SECOND 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 website, 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 at Phone: 703-788-2700, ext. 799. E-mail: customerservice@cganet.com.

Work Item 16-045
Hydrogen Technology Committee

NOTE—No technical information has been changed from the 2011 edition. This reaffirmed edition may include minor editorial changes.

REAFFIRMED: 2017
SECOND EDITION: 2011
FIRST EDITION: 2004

Contents **Page**

This page is intentionally blank.

1 Introduction

The storage of hydrogen gas using metal hydrides has found applicability to power supplies and various industrial applications requiring a supply of hydrogen gas.

There is a distinct need for designers, manufacturers, inspectors, users, testers, and authorities to understand the service conditions in which metal hydride systems need to perform. Knowing the service conditions paves the way for the most suitable and efficient components for these systems.

2 Scope

This publication outlines the service conditions expected for the system and various system components in a portable, reversible metal hydride system to be used for hydrogen storage. These systems do not include metal hydride battery systems.

This publication provides service conditions that are the basis for the design, manufacture, inspection, testing, and approval of the system and system components used with one or more chemical compounds generally described as a metal hydride.

Where appropriate, the specific component or a specific application is indicated; otherwise, the conditions of service for these systems apply to each component in all such services. Where known, system or component features are provided with minimum requirements.

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 Marking
Permanent means of identifying a system or system components with required information by stamp marking, labels, permanent tags, stencils, etching, etc.

3.2.2 Metal hydride system
Group of components assembled as a package to contain metal-hydrogen compound(s) for which there exists an equilibrium condition where the hydrogen absorbing metal alloy(s), hydrogen gas, and the metal-hydrogen compound(s) co-exist.

NOTE—Changes in pressure or temperature will shift the equilibrium favoring the formation or decomposition of the metal-hydrogen compound(s) with respect to the metal alloy(s) and hydrogen gas.