



**CGA H-2—2018**  
**GUIDELINE FOR**  
**CLASSIFICATION AND**  
**LABELING OF HYDROGEN**  
**STORAGE SYSTEMS WITH**  
**HYDROGEN ABSORBED IN**  
**REVERSIBLE METAL**  
**HYDRIDES**

**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 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 at Phone: 703-788-2700, ext. 799. E-mail: [customerservice@cganet.com](mailto:customerservice@cganet.com).

Work Item 16-018  
Hydrogen Technology Committee

NOTE—Technical changes from the previous edition are underlined.

SECOND EDITION: 2018  
REAFFIRMED: 2010  
FIRST EDITION: 2004

© 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 Introduction.....	1
2 Scope .....	1
3 Definitions.....	1
4 Applicable regulations .....	2
4.1 Shipping.....	2
4.2 On-site storage, installation, or workplace.....	2
5 Hazard classification .....	2
5.1 Shipping.....	2
5.2 On-site storage, installation, or workplace.....	2
6 Labeling.....	3
6.1 Shipping.....	3
6.2 On-site storage, installation, or workplace.....	3
7 Safety data sheets.....	3
8 References .....	3

**Table**

Table 1—Identification number, description, and hazard classification from the UN List of Dangerous Goods .. 3

This page is intentionally blank.

## 1 Introduction

With the commercial introduction of fuel cell-based power systems and the proliferation of hydrogen as a fuel gas, nontraditional hydrogen storage systems are becoming more prevalent. Therefore, there is a need for the dissemination of information on these alternative hydrogen storage technologies.

## 2 Scope

The scope of this publication includes hydrogen storage systems in which the hydrogen is absorbed in reversible metal hydrides and for which the system is designed to permanently contain the solid material so only hydrogen gas is introduced into or removed from the system. This publication provides guidance to regulatory authorities, manufacturers, and users for the classification and labeling of these systems.

## 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 Absorbed

State where hydrogen is chemically bonded within the structure of the storage material, typically a hydrogen-absorbing metal alloy.

#### 3.2.2 Metal hydride storage system

Reversible metal hydride system container including heat transfer surfaces, valves, pressure relief devices, and other appurtenances used for storage of hydrogen.

#### 3.2.3 Reversible metal hydride system

Closed system in which hydrogen is stored and released on demand by changing the hydrogen gas pressure or thermal state, thus upsetting the equilibrium condition between hydrogen, the hydrogen-absorbing alloy, and the metal hydride.

NOTE—The system is also characterized in that only hydrogen is released from or introduced into the systems during discharge and refueling.