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SERVICE CONDITIONS FOR PORTABLE, REVERSIBLE METAL HYDRIDE SYSTEMS

SECOND EDITION

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

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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.