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GB/T 42610-2023

Test Method for Evaluating Hydrogen Compatibility of
Plastic Liner of High Pressure Gaseous Hydrogen
Cylinders

高压氢气瓶塑料内胆和氢气相容性试验方法

(ISO 11114-5:2022, Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 5:
Test methods for evaluating plastic liners, MEQ)

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Test Method for Evaluating Hydrogen Compatibility of Plastic Liner of High Pressure Gaseous Hydrogen Cylinders

1 SCOPE

This document specifies the general requirements, test conditions, test methods, and test report with respect to the compatibility test of hydrogen with plastic liner of high-pressure gaseous hydrogen cylinders.

This document is applicable to the compatibility test of hydrogen with plastic liner for high-pressure gaseous hydrogen cylinders which are used to store hydrogen and have a working temperature of $\geq -40^{\circ}\text{C}$ and $\leq 85^{\circ}\text{C}$.

2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through normative reference in this text, constitute essential provision of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

- GB/T 1033.1 Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method
- GB/T 1040.1 Plastics—Determination of tensile properties—Part 1: General principles
- GB/T 1040.2 Plastics—Determination of tensile properties—Part 2: Test conditions for molding and extrusion plastics
- GB/T 5163 Sintered metal materials, excluding hard metals - Permeable sintered metal materials - Determination of density, oil content, and open porosity
- GB/T 5330.1 Industrial wire screens and woven wire cloth - Guide to the choice of aperture size and wire diameter combinations - Part 1: Generalities
- GB/T 5832.1 Gas analysis—Determination of water—Part 1: Electrolytic method
- GB/T 5832.2 Gas analysis—Determination of water—Part 2: Dew point method
- GB/T 6285 Determination of trace oxygen in gases—Electrochemical method
- GB/T 13005 Terminology of gas cylinders
- GB/T 28726 Gas analysis - Gas chromatograph with helium ionization detector
- GB/T 29729 Essential requirements for the safety of hydrogen systems
- GB/T 34542.1 Storage and transportation systems for gaseous hydrogen—Part 1: General requirements
- GB/T 37244 Fuel specification for proton exchange membrane fuel cell vehicles—Hydrogen

3 TERMS, DEFINITIONS AND SYMBOLS

3.1 Terms and Definitions

For the purpose of this document, the terms and definitions given in GB/T 13005 and the following apply.

3.1.1

plastic liner
inner plastic housing over which carbon fiber reinforced layers are wrapped for sealing gas, and which is not designed to afford any pressure load

3.1.2

seamless plastic liner
plastic liner which is integrally formed and free of any butt joint

3.1.3

welded plastic liner



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