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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 19158-2003

Replacing GB/T 19158-2003

**Fully-wrapped carbon-fibre reinforced aluminum lined gas
cylinders used on containers or skids for transportation or
skids for fueling station of compressed hydrogen**

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 19158-2003 "Compressed Natural Gas Cylinders for Station Use". Compared with GB/T 19158-2003, in addition to the structural adjustment, in addition to the integration and editorial changes, the main technical changes are as follows.

a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 2003 edition);

- b) The structural type, parameters and model nomenclature of gas cylinders have been changed (see Chapter 4, Chapter 4 of the 2003 edition);
- c) Added requirements for nominal volume, design cycle number, design life, etc. (see 5.1);
- d) The material requirements for gas cylinders have been changed (see 5.2, 5.1 and 5.2 of the 2003 edition);
- e) The design requirements for gas cylinders have been changed (see 5.3, 5.3 of the 2003 edition);
- f) The manufacturing requirements for gas cylinders have been changed (see 5.4, 5.4 of the 2003 edition);
- g) The test methods and qualification criteria have been changed (see Chapter 6, Chapter 6 and Chapter 7 of the 2003 edition);
- h) Changed the marking requirements for gas cylinders (see 9.1, 8.1 of the 2003 edition);
- i) Deleted the requirements for coating of gas cylinders (see 8.2 of the 2003 edition);
- j) Added requirements for electronic labels of gas cylinders (see 9.2);
- k) Added "Additional requirements for gas cylinders for station use" (see Appendix A);
- l) Added "Performance test method for gas cylinder seals" (see Appendix B);
- m) Added "Type test methods and qualification indicators for stop valves and safety pressure relief devices" (see Appendix C);
- n) Added "Interlaminar shear test method" (see Appendix D);
- o) Added "Fire test method for gas cylinders in bottle-type containers" (see Appendix E).

1 Scope

This document specifies the types, parameters, models, technical requirements, and test procedures of compressed hydrogen gas cylinders with aluminum liner and carbon fiber wrapped for container and station use.

Methods and qualification indicators, inspection rules, installation and protection as well as marking, packaging, transportation and storage.

This document is applicable to the design and manufacture of working temperature of -40°C~85°C, and is installed in bottle containers or cluster devices and other container storage and use Refillable gas cylinders for transportation (hereinafter referred to as container transport gas cylinders) and hydrogen refueling stations, as well as refillable gas cylinders used as fixed storage containers Refillable gas cylinders (hereinafter referred to as station gas cylinders).

- a) Gas cylinders for bottled containers. nominal working pressure is 30MPa~52MPa, nominal volume is 150L~450L;
- b) Gas cylinders for clustering devices. nominal working pressure not exceeding 35 MPa, nominal volume 40L~150L, gas cylinders on clustering devices the total volume is not more than 3000L;
- c) Station gas cylinders. nominal working pressure not exceeding 70 MPa, nominal volume 150L~450L.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 191 Pictorial markings for packaging, storage and transportation GB/T 192 Basic profile of common thread GB/T 196 Basic dimensions of common threads GB/T 197 General thread tolerances GB/T 228.1 Tensile tests on metallic materials - Part 1: Room temperature test methods GB/T 230.1 Rockwell hardness test for metallic materials - Part 1: Test method GB/T 231.1 Metallic materials Brinell hardness test Part 1: Test method GB/T 232 Metallic materials bending test method GB/T 528 Determination of tensile stress-strain properties of vulcanized rubber or thermoplastic rubber GB/T 533-2008 Determination of density of vulcanized rubber or thermoplastic rubber GB/T 1458 Test method for mechanical properties of annular specimens of filament-wound reinforced composites GB/T 1677 Determination of epoxy value of plasticizers GB/T 2941-2025 Rubber physical test methods - General procedures for specimen preparation and conditioning GB/T 3191 Aluminium and aluminium alloy extruded bars GB/T 3246.1 Microstructure test methods for wrought aluminium and aluminium alloy products Part 1: Microstructure test methods GB/T 3246.2 Microstructure test methods for wrought aluminium and aluminium alloy products Part 2: Macrostructure test methods GB/T 3362 Test method for tensile properties of carbon fiber multifilament GB/T 3452.2 O-rings for hydraulic and pneumatic applications - Part 2: Specification for appearance quality inspection GB/T 3512 Vulcanized rubber or thermoplastic rubber - Hot air accelerated aging and heat resistance tests GB/T 3634.2 Hydrogen Part 2: Pure hydrogen, high-purity hydrogen and ultrapure hydrogen GB/T 3880.1 Aluminium and aluminium alloy plates and strips for general industrial use Part 1: General requirements